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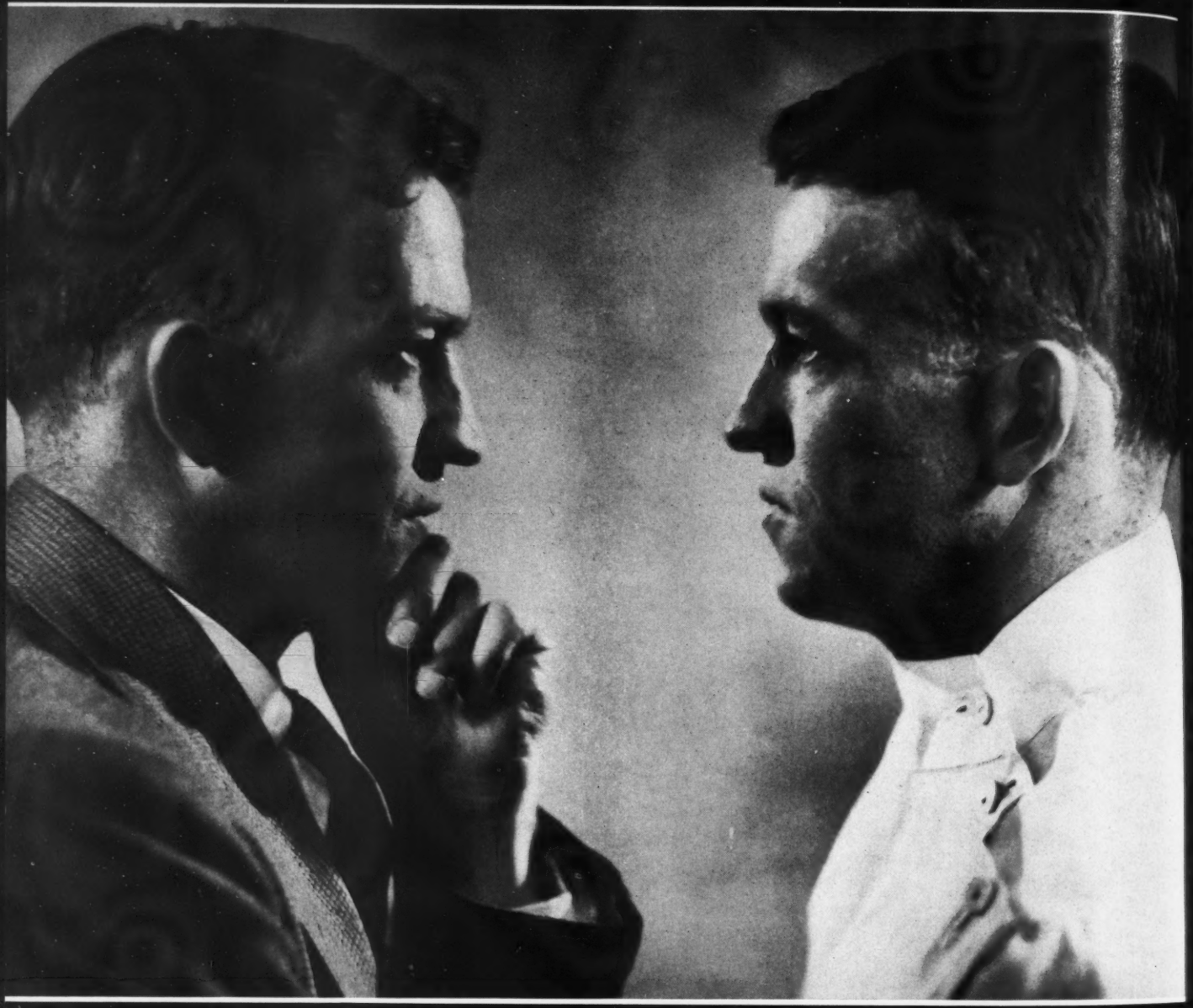
The DENTAL DIGEST

MAY, 1936
Vol. 42 No. 5

If You Were The Patient...



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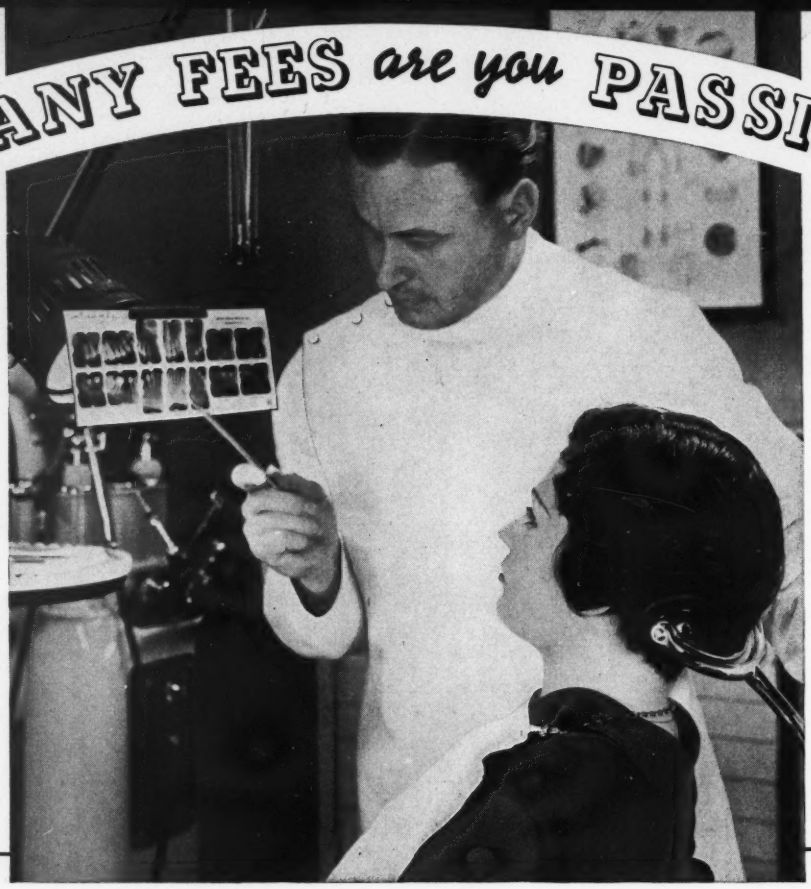

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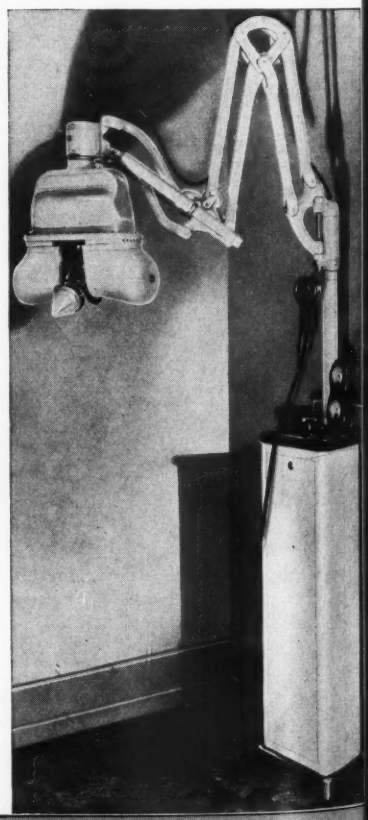

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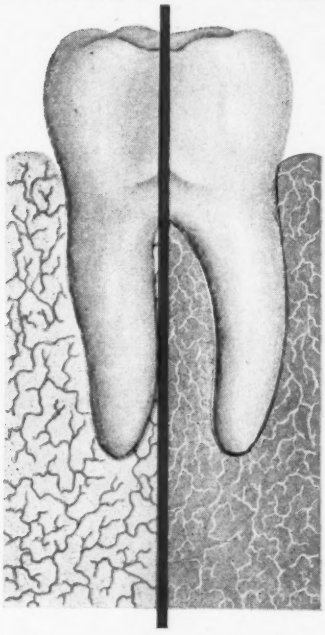

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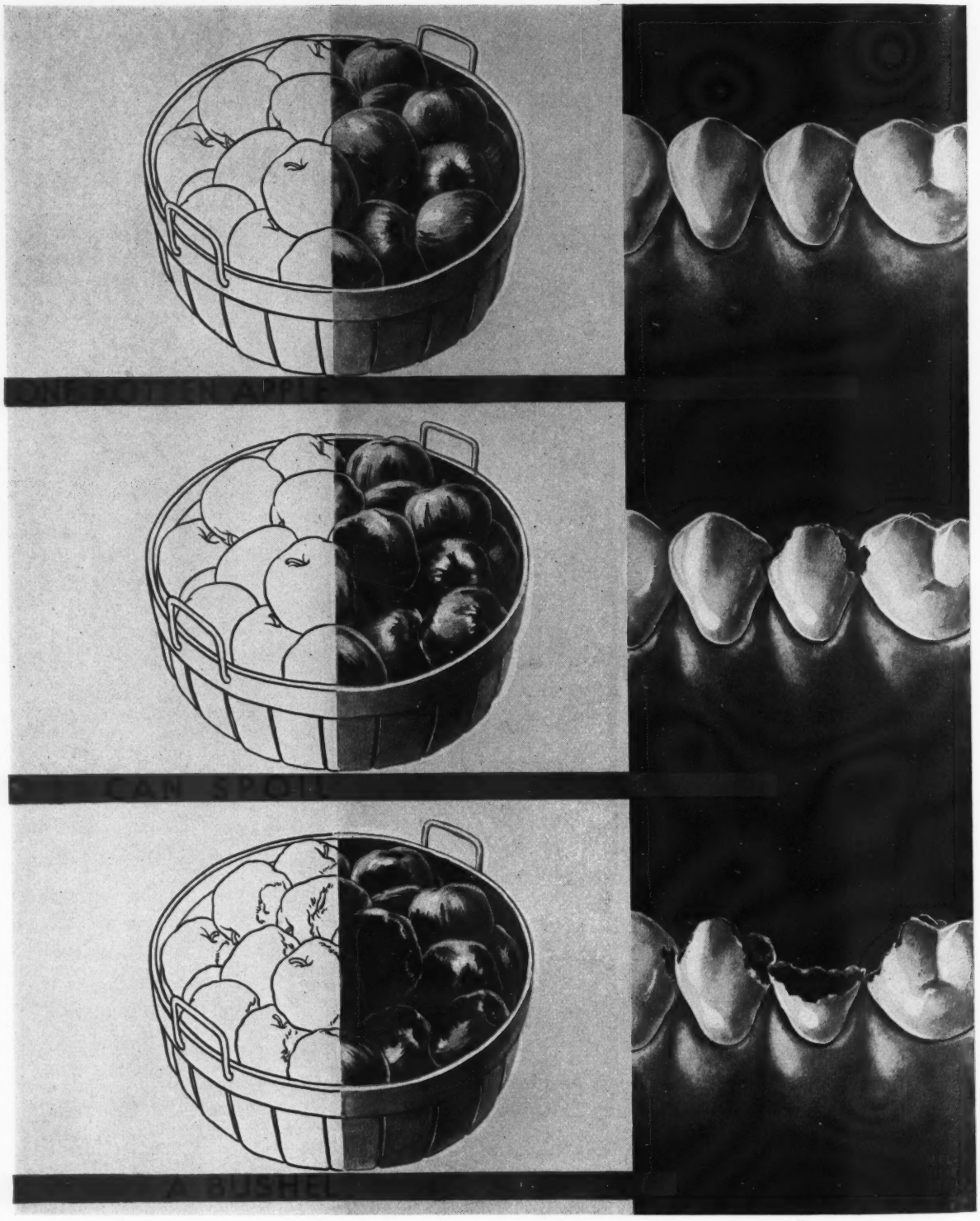
THE EDUCATION OF THE DENTAL PATIENT*

IV. One Rotten Apple Can Spoil a Bushel



*This is the fourth chart in the third series intended for the use of the dentist in explaining important normal and pathologic dental conditions to his patients. The first and second series have been published in booklet form.

The DENTAL DIGEST

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THE SEMIDIRECT PORCELAIN JACKET CROWN

FREDERICK H. DONER, D.D.S.
Watertown, New York

PORCELAIN has never held the prominent place it deserves as a medium for restoring lost and impaired tooth structure. This is due to some extent to the belief that it is more difficult to manipulate than other materials, and that it requires some special aptitude on the part of the operator. Fear of its fragility is another reason for not accepting this material, but this can be overcome, and porcelain can be accepted almost without reservation if a few principles are observed: Proper preparation, good condensation, and proper firing, together with the provision of sufficient bulk where the greatest stresses occur, will give porcelain ample strength.

TECHNIQUE

Preparation of Stump—The preparation of the stump is not of particular interest at this time. It is essential that the preparation have a well defined shoulder, especially on the lingual, and sufficient lingual curvatures, so that the finished crown will have enough bulk to withstand occlusal stress.

Preliminary Steps—Let us suppose that we are to place a porcelain jacket crown on an upper right central incisor and that the stump has been properly prepared. The copper band has been fitted and festooned, and the labial surface marked before the shoulder was cut. Some mark of distinction must be made in order to know how far to carry the impression up onto the tooth to include the entire shoulder. This may be best accomplished if, at the time the band is fitted, a line is marked on the band at the gum margin or if the incisal edge of the adjacent teeth is marked on the band. The band is filled with softened impression compound, is pressed into place, chilled, and removed (Fig. 1).

The Form—A celluloid crown form is selected which approximates in size and outline the tooth to be replaced. This crown form is trimmed at the neck until it fits the shoulder accurately. The incisal edge should be allowed to extend about 1 mm. below the incisal edge of the left central (Fig. 2). This crown form should fit tightly at the contact points.

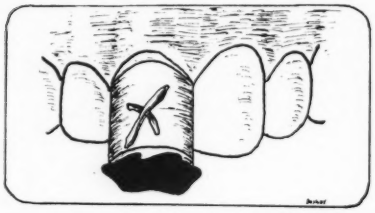

Fig. 1—Impression in place on the stump showing the marks that locate the band in its final position.

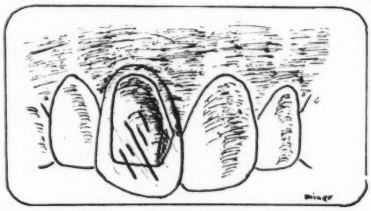

Fig. 2—Celluloid crown form trimmed to fit at the gingiva.

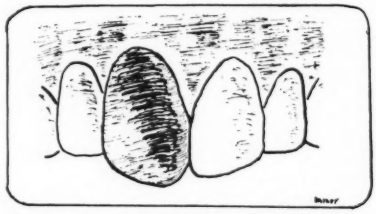

Fig. 3—Crown form filled with wax with an incisal extension of from 1 mm. to 1.5 mm.

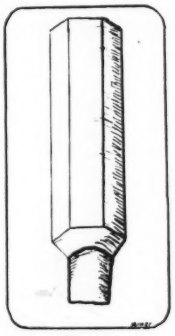

Fig. 4

Fig. 4—Die with sufficient extension, beveled margin at the shoulder, and flattened labial surface.

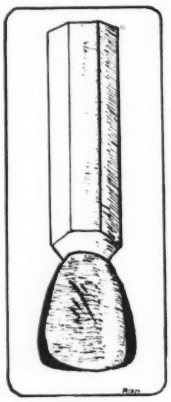

Fig. 5

Fig. 5—Die with crown form in position. Mesial and distal addition of wax to allow for mesio-distal shrinkage.

The form is filled with warm baseplate wax with a layer of warmed inlay wax placed in the gingival portion, and is pressed to place on the stump until the desired position is had. It is then chilled, the excess wax trimmed away at the neck, and removed from the stump (Fig. 3).

The copper band impression is wrapped, invested in plaster, and packed with amalgam. The die should have an extension of at least one-half inch to facilitate handling.

Making the Mold—1. A beveled margin is made extending around the die to a distance of 1 mm. from the shoulder to allow for an apron on the matrix (Fig. 4).

2. The labial surface of the die extension should be flattened somewhat, so that it may have a definite seat in the mold.

3. The celluloid crown form is put in place on the die and held there with some soft wax around the gingival edge.

4. To compensate for the mesio-distal shrinkage about 0.5 mm. of wax is run along each of these two surfaces (Fig. 5). It has been found that when porcelain has been molded in the manner described, the crown will shrink 1 mm. or less mesio-distally and 1.5 mm. or less gingivo-incisally.

5. The die and crown form are now oiled.

6. A "Faultless" bottle cap is used to hold the mold. These caps are made of thin rubber, having a diameter of 2 inches with a wall of five-eighths inch, and are used as covers for babies' nursing bottles. They may be obtained at any drug store.

7. An ideal instrument to keep the halves of the mold in position may be made from a piece of tin plate, having a diameter of 2 inches and an extension; two nails, soldered 1 inch apart, are placed through the floor of the rubber cap before the die and crown form are invested. The extension on this plate serves as a handle for the mold during the process of packing (Figs. 6 and 7).

8. One of these caps is filled with any quick-setting stone plaster, the die with the crown form is placed with the labial surface downward in the soft stone, and allowed to settle

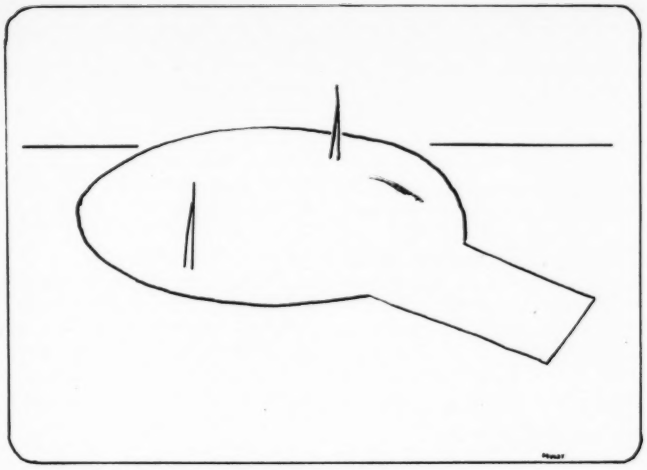

Fig. 6—Tin plate "jigglator."

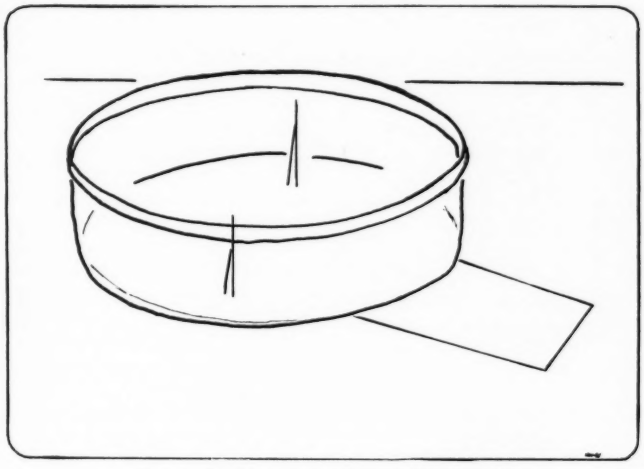

Fig. 7—Rubber cap in place on "jigglator."

until the median line is reached labio-lingually (Fig. 8).

9. When the stone has set, the cap is removed, and the mold is sawed through to a depth of one-fourth inch, so that when the mold is fractured, the break will come as near the midline mesio-distally as possible (Fig. 9).

10. The mold is placed in the palm of the hand and with a horn mallet is hit on the reverse surface with one or two sharp blows. The mold will fracture at or near its midline.

11. The sharp edges on the periphery of the imprint in the mold should be beveled.

12. If the mold is placed in a boiling solution of 1 part of stearic acid to 5 parts of carbon tetrachloride for 30 seconds, it will become thoroughly waterproof. This solution must be kept in a tightly corked bottle and more carbon tetrachloride added from time to time to replace the highly volatile solvent.

13. The forming of a matrix will not be discussed here. Information on this step is available in any textbook on dental ceramics.

Packing the Mold—With the matrix in place on the die, the sections of the mold in place in the rubber cap, and the cap reinforced by placing a rubber band around its circumference, we are ready to pack the porcelain. The crown imprint must be coated with a thin film of olive oil. It is wise, at the time the shade is determined, to make a diagrammatic note of the position of the shades in the tooth.

Inasmuch as the bottom of the

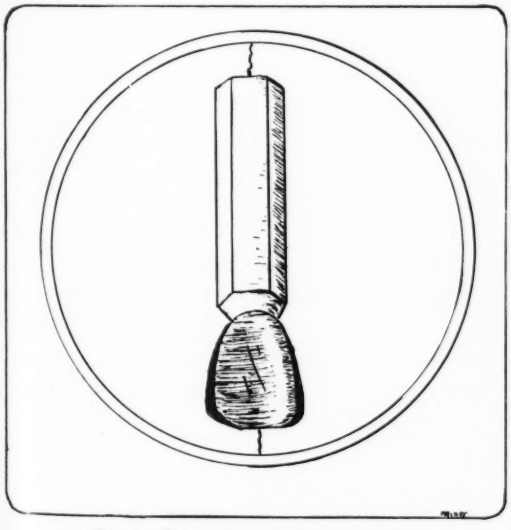

Fig. 8—Die and crown form invested.

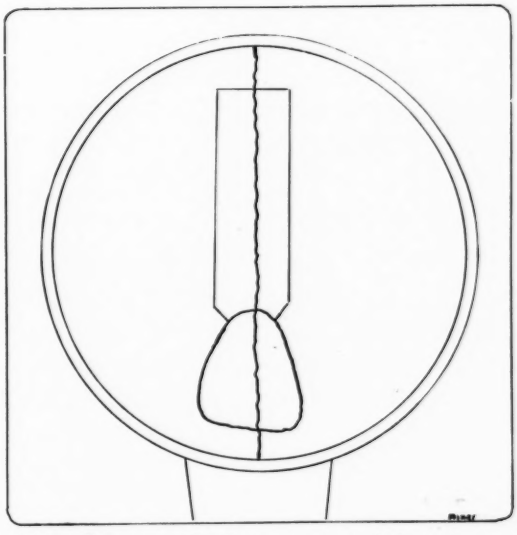

Fig. 9—Fractured mold showing imprint of die and crown form fractured at its median line.

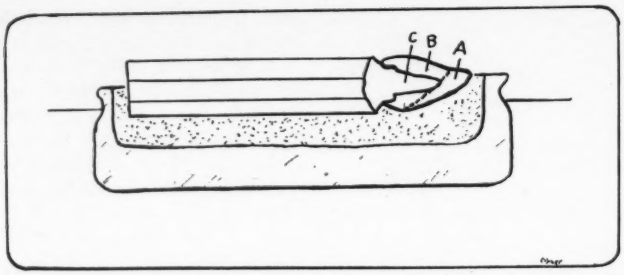

Fig. 10—Relationship of incisal shade A to gingival shade B to matrix C.

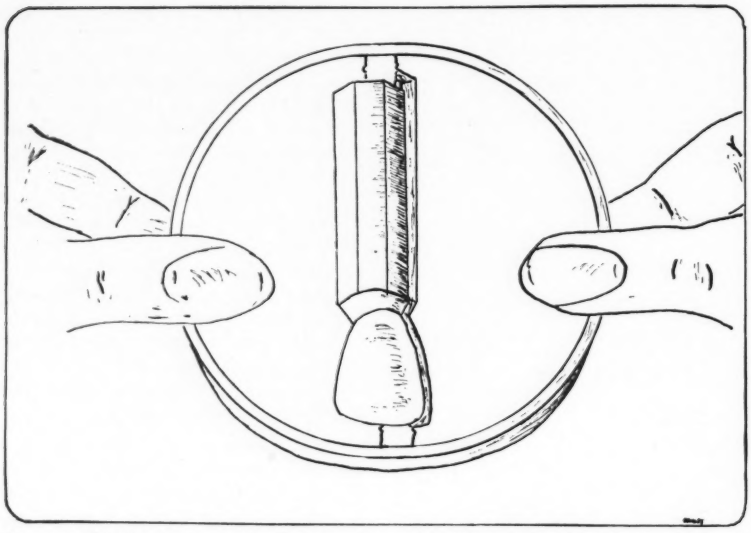

Fig. 11—Mold being separated and the die and molded crown about to be released.

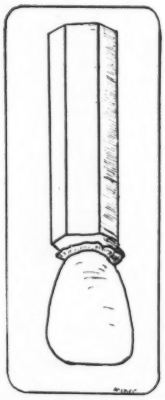

Fig. 12

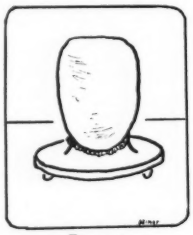

Fig. 13

Fig. 14

Fig. 12—Molded crown in place on die after thorough condensation by burnishing.

Fig. 13—Crown in place on fire-clay pedestal, ready for firing.

Fig. 14—Crown fired to a hard biscuit; apron and excess porcelain ready to be ground flush with the shoulder.

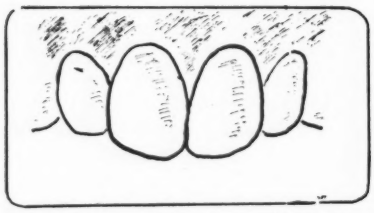

Fig. 15—Glazed crown ground to fit at contacts; alinement and bite adjusted, ready for cementation.

mold represents the labial surface of the crown, the incisal shade predominates and will be placed in position first (Fig. 10). Each case determines the amount and position of incisal and gingival shade to be used in the finished crown. It is possible with this technique to place the different shades or blend of shades in any position desired.

The condition of the porcelain is important. Porcelain that has been aged or soaked before using condenses better, has fewer bubbles or blebs, and separates from the mold easier than porcelain to which the water has been only recently added. Porcelains that do not require blending to produce the shades may be kept in proper condition by adding distilled water from time to time directly to their containers.

But in porcelain for which the colors must be blended to arrive at a shade, the moisture cannot be added until after the colors are mixed. The proper shades are placed on their individual glass slabs, triturated with a bone spatula, and the slab vibrated or tapped on the bench to remove any entrapped air. The excess moisture may be removed by blotting with a linen towel. The consistency should be that of soft putty.

The proper amount of moisture may be maintained at all times by applying the water with an atomizer as described by Doctor E. Bruce Clark.[1] A small perfume atomizer, sold at the five and ten cent stores, works well.

The incisal shade is placed in the incisal portion of the mold and jarred to place by tapping on the bench. If excess moisture appears, it may be removed by blotting. If the incisal shade has extended beyond its desired position gingivally, the excess may be cut away with the porcelain carving instrument and burnished to a thin edge. Some of the incisal shade must be carried up on the mesial and distal borders of the mold.

The gingival shade is now added and tapped to place. If any excess extends gingivally on the imprint of the die extension, it should be cut away. The center of the mold, or that portion occupied by the matrix is moistened with the atomizer, the matrix moistened, the die put in place and jarred until it fits snugly in its imprint. Moistened gingival shade is added mesially or distally and tapped until moisture appears on the other side. Excess moisture is removed, and the lingual surface is built up with gingival shade.

Lingually only the incisal shade should occupy the incisal one sixth of the mold. The lingual surface may be formed to some extent by placing a linen towel over the ball of the index finger and applying pressure as the porcelain is dried. This pressure has a tendency further to condense the whole mass. It is possible with a porcelain carver to burnish and carve the mesial and distal ridges, the

[1]Clark, E. B.: Manipulation of Dental Porcelain, J. A. D. A. 22:33 (January) 1935.

linguo-gingival ridge, the linguo-gingival depression, and the lingual depression.

The whole mass may be further condensed by whipping with a long-haired sable brush. Any excess porcelain extending over the periphery of the mold may be trimmed away with the carver. At this stage, the porcelain should represent a hard, dry, well condensed mass from which all excess moisture has been removed. From time to time as the mold is being packed, if the porcelain becomes too dry, moisture may be added from the atomizer.

Separation of the Mold—1. To remove the die and molded crown, grasp the halves of the mold between the thumb and index finger of each hand and pull laterally until one section separates from the crown.

2. Allow this separated portion to go back to place, and jiggle it gently against the extension of the die; the crown will come away from the other half of the mold (Fig. 11).

3. By bending the first half down out of the way, the extension may be grasped with a pair of pliers and easily removed.

4. On inspection, it will be found that the labial surface of the crown may have several defects, such as tiny surface bubbles, a slight extension of porcelain at the fracture of the mold, or an extension around the periphery of the crown. The bubbles may be corrected by slightly wetting with a moist brush and filling with a small amount of wet porcelain of the proper shade. Any other depression may be taken care of in the same manner.

5. It may be found that there is an excess of porcelain extending onto the apron. This excess should be trimmed away until the shoulder is reached.

6. Shrinkage should be taken care of at this time.

7. If a thin solution of the gingival shade is placed around the shoulder with a brush and thinned away toward the apron, after firing, a thin edge of porcelain will extend around the neck of the crown. This edge may be ground flush with the shoulder after the crown has been fired.

8. The whole surface of the crown may now be made smooth and further condensed by whipping and burnishing with the carving instrument and the ball of the finger (Fig. 12).

9. The molded crown is removed from the die and placed on a fire clay tray or pedestal (Fig. 13), which, in turn, is placed on the shelf of the furnace near the door to dry. Any firing technique may be used. When the pyrometer has reached the fusing point of the porcelain being used, however, the crown should be moved in front of the open door and left there until it has burned as white as it will at this point. It is then moved further into the furnace. When the entire crown has burned white, it is moved under the thermo-couple, and the door closed; the piece is fired to a hard biscuit which will produce its complete shrinkage.

10. When it is removed from the furnace, it is placed under a glass covering to allow it to cool gradually (Fig. 14).

Adjustment of the Crown—1. With the patient in the chair, the apron is cut away, the contacts adjusted by grinding, the incisal edge ground to alinement, and any extension of porcelain at the shoulder ground until an accurate fit is secured.

2. The bite, if it is too full, is ground until it is sufficiently relieved.

3. Any surface markings that will tend to make the crown more natural may be reproduced at this time.

4. When every effort has been made by the operator to produce a natural appearing crown, the crown is scrubbed well with soap and water, dried, and returned to the furnace for glazing.

5. When the crown has sufficiently annealed, the matrix may be removed. The platinum seems to strip away from the porcelain easier if it is dipped in water or alcohol from time to time.

6. Care must be used in selecting the shade of cement; otherwise, the cementation is accomplished as in cementing any other dental restoration (Fig. 15).

Conclusion

Beside line and color, perfection in fused porcelain depends on density, homogeneity, and strength; strength depends on proper condensation, homogeneity, and proper firing. It is an established fact that porcelain that has been fired only once is stronger and of better color than that which has been subjected to heat several times. Doctor J. Raymond Gill[2] has concluded from a series of experiments that porcelain that has been condensed by vibration in a matrix, either mechanical or hand vibration, has greater transverse strength and a more uniform structural arrangement. One might deduct from this knowledge that porcelain condensed in a mold and against the matrix would have a greater density and more homogeneity than porcelain condensed in any other manner.

[2]Gill, J. R.: Method and Results in Condensation of Dental Porcelain, J. A. D. A. 19:7 (July) 1932.

538 Woolworth Building.

AMERICAN DENTAL ASSOCIATION CONVENTION

July 13-17

San Francisco

Cathedral aisles of giant Redwoods, north of San Francisco. Here grow the world's tallest trees, ages old. *Californians, Inc. photo.*

THE PUBLIC HEALTH SIGNIFICANCE OF VINCENT'S INFECTION

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VINCENT'S infection, also known as trench mouth and by several other terms, has been identified as a disease entity since the days of Plaut and of Vincent,[1] but in many respects our knowledge of this disease is still meager, although certain objective characteristics are now recognized facts: Vincent's infection has a definite clinical picture. Usually a symbiotic arrangement of certain bacteria are present, and the disease is highly contagious. The fact that it is contagious should make it an object of serious public interest.

This disease is primarily one of the mucous membranes, but malaise, fever, and similar signs of general physical disturbances frequently accompany it. Many cases have been reported of so-called fuso-spirochetal abscesses throughout the body which have resulted in serious impairment of general health.

According to our present knowledge the disease must be divided into at least two stages, acute and chronic, although some add a third called the subacute stage. The acute form needs no particular discussion because its clinical picture, characterized chiefly by sloughing gums, is generally recognized. The chronic stage, however, warrants more appreciation than it has previously received, because of its public health significance.

Vincent's infection is usually associated with a certain symbiotic arrangement of a fusiform bacillus, the *Fusiformis dentium,* and one of the spirochetes. This is generally considered as being the *Borrelia vincenti,* but one also finds *Treponema macrodentium, Treponema microdentium,* and *Treponema mucosum* present in most smears. Inasmuch as our knowledge of the importance of this bacterial symbiosis is meager, one cannot at this time accurately state which of the various spirochetes is the actual instigating factor; therefore, the present laboratory diagnosis of the disease is not completely satisfactory. Should one consider all cases in which these organisms are present as Vincent's infection, or merely a gingivitis as some health officers insist? To call the disease gingivitis, it seems to me, is mere term quibbling, because according to definition, any inflammation of the gums is a gingivitis; the word, therefore, means nothing if it is not qualified.

There is considerable evidence pointing to the fact that the micro-organisms found in cases of Vincent's infection are not normal inhabitants of the mouth. It is, however, possible for them to gain entrance to the gum tissues and propagate there for considerable periods with little local disturbance or physical discomfort. The gums may bleed at times, feel sore and sensitive, and there may or may not be some puffiness. This, one may term the chronic form of Vincent's infection.

Microscopic examination of cases of this type reveals a factor that has not heretofore been emphasized; namely, that the spirochetes predominate; only an occasional *Fusiformis dentium* is found; whereas, in the acute cases the two are almost of equal number. Just how important this is, we do not yet know; but it leads to theories that the agent which produces the sloughing and pain of the acute stage is the bacillus, and that the persistent micro-organisms that penetrate tissue are the spirochetes. Studies of many cases at the Michigan State College seem to substantiate these statements.

The chronic stage of the disease, persisting as it does for many months, and often remaining unrecognized for long periods, warrants the utmost interest from public health authorities. We must consider one who has a chronic Vincent's infection as a carrier of disease who should be treated as such. Unsuspecting persons or those having chronic cases of Vincent's infection may carry the disease, and the micro-organisms, which may have become relatively harmless to them, may be transmitted to another to whom they would be virulent. That is how many cases of the disease[2] are innocently acquired or spread.

This view of Vincent's infection gives it a new public health significance. The several state boards of health have drawn up specific regulations regarding contagious diseases, their prevention and control. These precautionary methods usually divide contagious diseases into three classes: those which must be placarded, quarantined, or those which must be otherwise reported and are subject to certain limitations and sanitary measures. Vincent's infection is generally placed in the third group, which would be satisfactory if it were fully enforced.

Nearly every report that has been written on the subject of Vincent's infection during the last few years contains the statement that the incidence of the disease is increasing. Doctor Davis[3] of the Michigan State Board of Health stated recently, "There is a rather widespread opinion, especially among health officers and some physicians and dentists that the milder types of Vincent's infection are on the increase." These assertions have been questioned in some instances and some public health authorities will dispute them, but figures from states where some attempt is made to enforce regulations substantiate them. For example in the State of Washington where Vincent's infection is classed as a common communicable disease and according to law is reportable within twenty-four hours to county and city health officers, there were seven cases reported in 1931 and 343 in 1934—a tremendous increase from a percentage standpoint. Ninety-five cases were reported in Illinois in 1931 and 758 in 1934 or a 700 per cent increase. In up-state New York 880 cases were reported in 1931 and 1733 in 1934, or more than a 100 per cent increase. These figures do not tell the whole story, for one must recognize various influences, but they show sig-

(*Continued on page* 154)

[1]Lichtenberg, H. H.; Werner, Marie, and Luek, Esther V.: The Pathogenicity of the Fusiform Bacillus and the Spirillum of Plaut-Vincent, J. A. M. A. 100:707 (March 11) 1933.

[2]Stafne, E. C.: The Etiology of Ulcerative Gingivitis, Internat. J. Ortho. & Oral Surg. 15:1126, 1929. Albray, R. A.: Vincent's Infection, D. Cosmos 73:878 (August) 1931.

[3]Davis, W. R.: Vincent's Infection, Michigan J. Pub. Health, November, 1935, page 204.

PROSTHETIC CORRECTION OF A NASAL DEFORMITY

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HISTORY—Mr. W., aged 53, suffered the loss of the right side of the nose, including the ala, as a result of surgical removal of a carcinoma (Fig. 1). A rhinoplasty was considered inadvisable until the success of the operation was assured and a recurrence of the tumor appeared unlikely.

Treatment—For cosmetic purposes a vulcanite nose was constructed, the appearance of which was improved by the patient's own ability with a brush and oil paints.

Technique—1. Pink base-plate wax approximately 5 mm. thick, was roughly modeled to simulate the appearance of the part of the nose that was removed, and placed in position on the patient's face. The wax form completely covered the bridge of the nose from the root to the tip, over the septal cartilage, and over to the cheek.

2. The wax was carved to produce proper proportions and symmetry between each side of the face, and thinned at the periphery where it came in contact with the skin.

3. A loop of 18 gauge gold wire was embedded in the wax near the root of the nose and extended over on the left side of the nose to rest on the skin. A similar loop of gold wire was embedded in the wax covering the septal cartilage, and extended into the left naris where it rested against the cartilage. These wires (Fig. 2) assist in retaining the nose in position.

4. The wax pattern containing the wires was invested in a denture flask and reproduced in pink vulcanite.

5. The inner surface of the vulcanite nose was highly polished to prevent irritating the tissues. As the outer surface did not present a harmonious appearance when polished, a dull finish was produced by gently rubbing with No. 000 sandpaper (Fig. 3).

6. Oil paints applied to the dull finish harmonized well with the color of the skin.

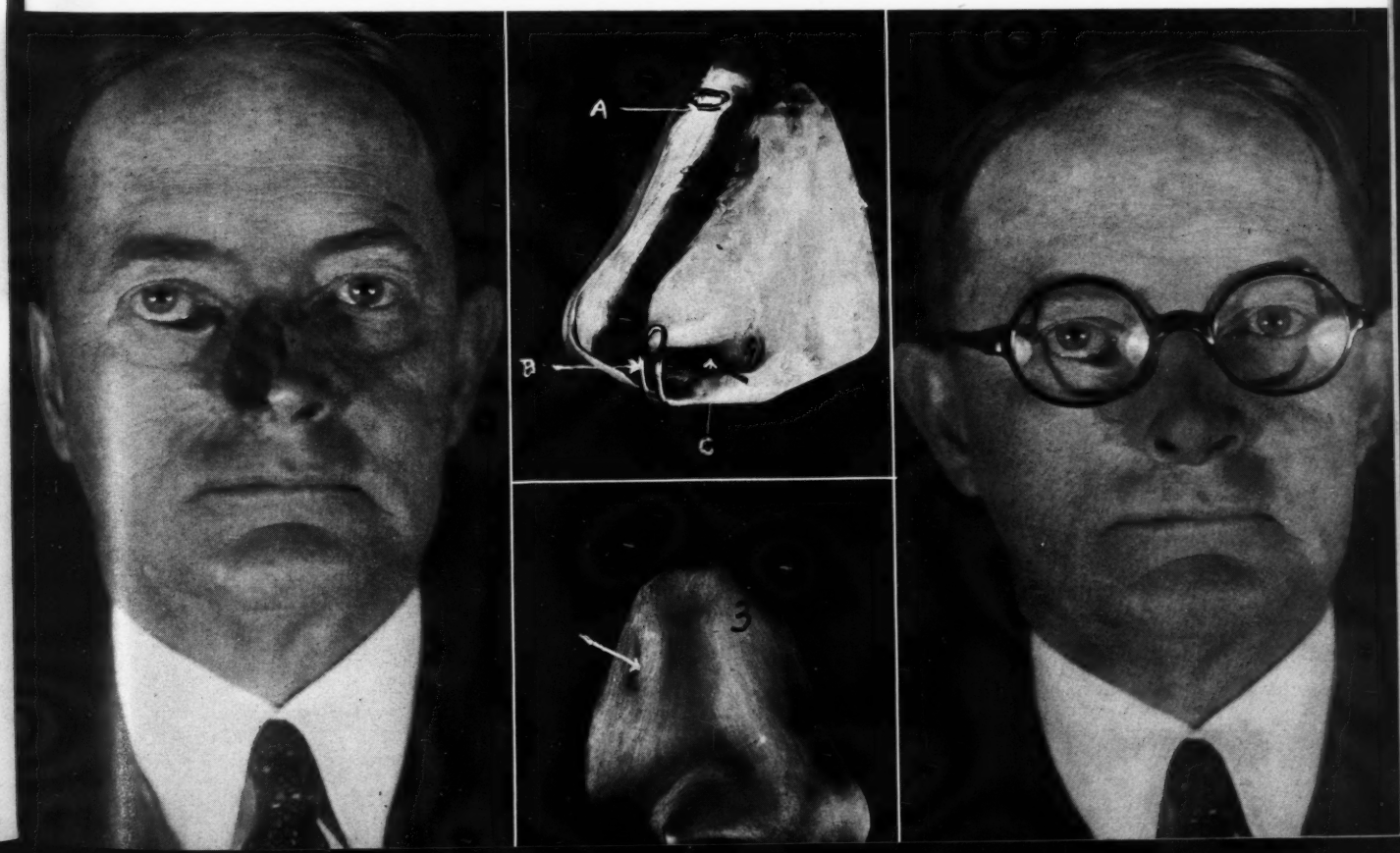
7. Horn-rimmed spectacles that rest on the artificial nose help, with the aid of the gold wires, to retain the nose in place (Fig. 4).

8. The ectropion (Fig. 1) of the lower lid of the right eye has since been corrected by a plastic operation.

Tenth Street and Troost Avenue.

Fig. 1—Appearance of patient eight months after operation.
Fig. 2—Inner surface of vulcanite nose. A, Gold wire loop that rests on left side of nose; B, gold wire loop that enters left naris and rests against septal cartilage; C, inner opening of right naris.

Fig. 3—Lateral view of finished vulcanite nose. Arrow indicates depression into which the rim of spectacles rests.
Fig. 4 Vulcanite nose in position.



ORAL SURGERY: REPORT OF CASES

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CASE 1—*History*—M. F., a white girl, aged 16 years, presented to her dentist with a history of pain radiating through the right side of the lower jaw and sore inflamed gum tissue distal to the last tooth on that side. The patient was referred to us for diagnosis and treatment.

Clinical Examination—No teeth were found to be present distal to the lower right first molar, and no history was given of any having been extracted. The soft tissues in the second molar region were highly inflamed, and pus was exudating from a fistula through which something could be felt with a probe; we supposed this was the crown of the tooth.

Roentgenographic Examination — Roentgenograms revealed the presence of a large radiopaque anomaly in the position of the second molar and a fully formed molar directly under it. As can be seen from the accompanying roentgenogram the roots of this tooth were almost on the inferior border of the mandible (Fig. 1).

Diagnosis—An odontoma was present in place of the normal third molar, with an impacted second molar. Great possibilities of a fracture of the mandible as an operative complication were foreseen.

Treatment—The odontoma was removed under local anesthesia and

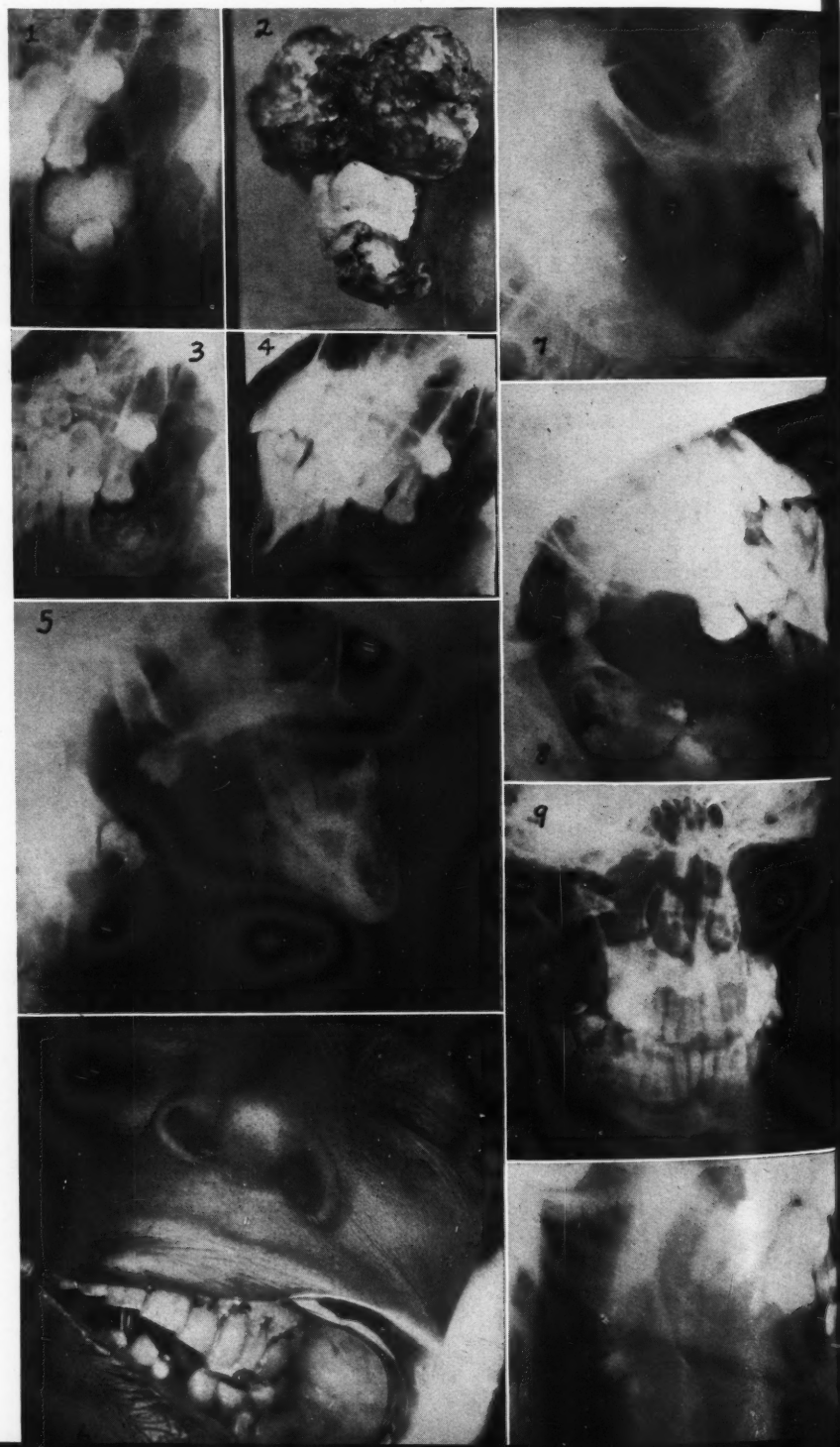

Fig. 1 (Case 1)—Roentgenogram showing roots of tooth almost at inferior border of mandible.

Fig. 2 (Case 1)—Odontoma and extracted second molar. Note groove on lingual surface.

Fig. 3 (Case 1)—Radiopaque body filling cavity.

Fig. 4 (Case 1)—Bone regeneration eight months after operation.

Fig. 5 (Case 2)—Unerupted upper left third molar in tuberosity and large unerupted lower left third molar with inferior border of dental follicle resting on superior border of inferior dental canal.

Fig. 6 (Case 4)—Owing to trismus, this is as wide as the patient was able to open her mouth. External swelling with glands on left side considerably enlarged and palpable.

Fig. 7 (Case 4)—Roentgenogram showing ragged appearance in body of mandible.

Fig. 8 (Case 5)—Unerupted molar lying horizontally at the inferior border of the mandible at the angle.

Fig. 9 (Case 5)—Anteroposterior view showing unerupted tooth against buccal cortical plate. Compound follicular odontoma occupying almost all the anterior half of ramus.

Fig. 10 (Case 5)—Postoperative roentgenogram showing bone regeneration and two small follicles in posterior half of ramus.

the tooth extracted at the same time. The entire cavity was full of serous fluid but no cystic membrane was found. The first molar was left in place although its distal root was undermined by the cavity. A gauze dressing, in which a sedative surgical cement was incorporated, was placed in the cavity. This accounts for the slight radiopaque body filling the cavity in Fig. 3. This dressing was changed at intervals until the cavity filled in from the bottom. The first molar began to ache and became sore three months after this operation and it had to be extracted. Fig. 4 shows bone regeneration eight months after the operation. A fracture fortunately did not occur.

Postoperative Diagnosis—Laboratory section showed the specimen to have both enamel rods and dentinal tubuli, and it was diagnosed as a composite odontoma formed from the developing third molar. Despite its unusual position the molar beneath the odontoma was thought to be the second molar, because the roots were fully formed and the patient was only 16 years of age.

The groove on the lingual surface of the tooth through which the inferior dental canal ran can be clearly seen in Fig. 2.

Postoperative Course—The patient experienced anesthesia of the lower lip for about three months, but otherwise made an uneventful recovery.

CASE 2—*History*—M. L. F., a white woman, aged 20, had all her upper teeth removed two years before examination, and has been wearing a full upper denture since that time. For six months prior to consulting us she had suffered at increasing intervals from a sharp, tingling, burning pain which radiated down the left side of her lower jaw from the angle to the median line. Her dentist had made an intra-oral roentgenographic examination and found no cause for the disturbance.

Examinations—Clinical examination revealed an edentulous maxilla and no teeth on the lower left side distal to the second bicuspid. The appearance of the soft tissues was normal.

Extra-oral roentgenographic examination revealed the presence of an unerupted upper left third molar in the tuberosity and a large undeveloped, unerupted lower left third molar, with the inferior border of the dental follicle apparently resting on the superior border of the inferior dental canal (Fig. 5). A narrowing of the inferior dental canal can be noted just under the tooth.

Diagnosis—A diagnosis was made of neuralgia of the third division of the fifth nerve caused by pressure exerted by the developing roots of the unerupted third molar.

Treatment—Removal of the tooth was done under general anesthesia. The upper third molar was not removed at this time. No anesthesia of the lip occurred as a result of the operation, and recovery was uneventful. The patient has had no return of the pain since the tooth was removed.

Remarks—Removal of these unerupted third molars with little or no root formation is much more difficult than a casual examination of the roentgenogram would at first indicate. The tooth is nearly always loose in its follicular cavity and has a tendency to turn over and over like a pea in a pod. For this reason the general practitioner who does not care to undertake the removal of impactions as a rule is apt to be misled into attempting these cases and meet with more difficulty and unpleasantness than he anticipated.

This case serves to illustrate the advisability of making an extra-oral roentgenogram of all suggestive cases. In the intra-oral examination which was made previously with negative observations the film was not placed back far enough to show this tooth. This is a common error, particularly in patients who gag easily or have tender mouths.

CASE 3—This is a case of fatality following extraction of a tooth and should serve to emphasize the importance of knowing a little of the patient's physical condition before treatment is instituted.

History—M. F. B., a colored woman, aged 24, who was eight months' pregnant, had an aching lower right third molar extracted on December 30, 1935. The patient's ankles were badly swollen. She gave a history of having had some trismus in the jaw and some pus draining from the soft tissue around the tooth.

Examination—We first saw the patient in the hospital on December 31, 1935. At that time she was in pain and marked edema was present over the right side of her face and neck. The right eye was closed.

The blood picture is significant. Examination of the blood was made on January 1, 1936, and showed: hemoglobin, 24 per cent; red cells, 1,750,000; white cells, 18,000 with lymphocytes 11 per cent; neutrophils, 88 per cent, and myelocytes, 1 per cent.

A significant factor was that the patient's temperature never rose above 99.5°F.

Examination of the urine showed hyaline and granular casts and pus cells. The albumin rose from 600 milligrams on December 30, progressively to 2500 milligrams on January 3.

Treatment and Course—A transfusion of 500 cc. of citrate blood was given on January 3.

The swelling spread over to the opposite side and almost closed the left eye. There was never any palpable area that could be incised for drainage. Hot moist applications were applied to the face. There was so much edema internally that the patient had great difficulty in breathing and swallowing.

The patient went into premature labor on January 3, and a live baby was delivered without complications or undue hemorrhage. The patient apparently suffered no ill effects from the delivery as her condition remained about the same until her death twelve hours after the birth of the child. The cause of death on the death certificate was given as cellulitis following extraction of tooth and pre-eclamptic toxemia.

Conclusions—This patient might have died from toxemia even if the tooth had not been extracted, but the fact remains that the cellulitis was a contributing cause of her death, if not the sole cause. She was a poor operative risk as is evidenced by her blood picture. *As long as dentists continue to extract teeth indiscriminately without taking the patient's general physical condition into consideration, a certain percentage of cases are bound to end fatally.*

CASE 4—J. J., a colored woman, aged 65, presented at the hospital clinic with the complaint of a "bleeding sore" on the gum tissue of the lower left side in the first molar region.

History—The patient said that six months previously, the left lower molars became loose and sore and she extracted them herself with her fingers. The sockets were sore and bled when touched ever since the extraction. The patient was suffering considerable pain.

Examinations—Clinical examination revealed the presence of a swollen inflamed indurated mass of hypertrophied tissue extending from the second bicuspid region to the retromolar triangle. This mass bled profusely to touch and pieces of it could be easily torn off with a hemostat. There was some external swelling and the glands on the left side were considerably enlarged and palpable (Fig. 6). There was so much trismus present that the patient could not open her jaws more than a centimeter. The whole region was exu-

dating a yellowish, foul-smelling fluid.

Roentgenographic examination revealed the presence of a large ragged edge, with an "eaten-out" appearance in the body of the mandible (Fig. 7).

A provisional diagnosis was made of a malignancy.

A biopsy was made and the laboratory report showed this to be an epithelioid carcinoma, grade 2.

Treatment—The patient was referred to the section of roentgen therapy. We did not consider this an operable case owing to the extensive bone destruction and the involvement of the glands. Removal of all the tissue necessary would have resulted in deformity, and the metastasis would have undoubtedly changed this carcinoma from a grade 2 into a grade 4

Comments—This case bears out strongly the fact that we must have the possibility of malignancy in mind when examining cases of this type. Had this patient gone to a dentist at the time the lower teeth became loose, he could easily have misinterpreted this as pyorrheal infection, if a roentgenogram had not been made. This should certainly refute the argument of many operators that there is no necessity for taking roentgenograms of "loose teeth."

CASE 5—*History*—Mrs. T., a white woman, aged 35, had suffered for several years with headaches in the occipital region and pains radiating through the lower side of the lower jaw.

Examinations—Clinical examinations revealed the lower left molars to be missing. There was no evidence of swelling, inflammation, or palpable areas.

Roentgenographic examination revealed the presence of an unerupted molar lying horizontally at the inferior border of the mandible at the angle (Fig. 8). An anteroposterior view showed this tooth to be against the buccal cortical plate (Fig. 9). Above this unerupted tooth and extending well up into the ramus was a radiopaque mass which appeared to be a follicular odontoma.

Diagnosis—A diagnosis was made of a composite follicular odontoma, probably formed from several supernumerary teeth, complicated by the presence of an unerupted third molar, the removal of which would incur grave danger of fracture.

Treatment—The tooth and cyst contents were removed under general anesthesia intra-orally. The cystic cavity contained not one large mass as appears in the roentgenogram, but a number of small bud-like embryonic teeth. The entire mass was enclosed in a cystic membrane which was enucleated. The unerupted molar was removed through the cystic cavity, and we were fortunate in preventing a fracture of the mandible. The entire wound was kept open with hard dressings until it healed from the bottom. Recovery was uneventful and the patient has had no return of either the headaches or the pain in the jaw. This operation took place more than two years ago.

Postoperative Examination—Recently the roentgenogram shown in Fig. 10 was made. As can be seen, the area formerly occupied by the unerupted tooth and the anterior portion of the cyst has had good bone regeneration. Two small follicles can be seen in the posterior half of the ramus. By comparison with the preoperative roentgenogram it will be seen that these follicles are in the same position as previously. The fact that these were left in place can be accounted for by the fact that they were outside the cystic membrane which enclosed the larger anterior portion and there was a thin, bony septum separating the posterior from the anterior compartment. When we reached the bottom of the cavity and found supposedly healthy bone, we thought we had the entire cystic content.

Conclusions—This case shows the necessity for making postoperative roentgenographic check-ups in all cases, and particularly in those as complicated as this one. Had this been done immediately after the operation, it would have been a comparatively simple matter to have gone back through the cystic cavity and removed these remaining follicles. As the case exists today we do not think it would be advisable to attempt their removal, in the absence of any neuralgic or systemic disturbances. The inferior dental canal can be clearly seen just distal to the follicles. If the follicles should either enlarge or change their position, the patient would probably have some neuralgic disturbance, in which case the follicles would have to be removed.

601 Medical Arts Building.

THE PUBLIC HEALTH SIGNIFICANCE OF VINCENT'S INFECTION

(*Continued from page* 150)

nificant increases, and one can safely say that if all cases were reported the figures would be even more impressive.

MAJOR CAUSE OF INCREASED INCIDENCE: PREVENTIVE SUGGESTION

I believe that the unsanitary conditions prevailing in most beverage dispensing establishments as demonstrated by high bacterial counts and reported by Doctors Mallman and Devereaux[4] and by me[5] in recent publications, explain the increase in this disease. The spread of the disease warrants the demand for: (1) more rigid enforcement of sanitary standards in beverage-dispensing establishments; (2) better control of Vincent's infection; and (3) education of the public to demand proper sanitary measures to protect their health.

[4]Mallman, W. L. and Devereaux, E. D.: Sanitary Survey of Beverage Establishments, Am. J. Pub. Health 25:1007 (September) 1935.

[5]Lyons, D. C.: The Incidence and Significance of the Presence of Borrelia Vincenti and Other Spirochaetaceae on Beverage Glasses, J. Bacteriol. 31:83 (January) 1936.

National Bank of Jackson Building.

The Editor's Page

THE last quarter century marks the transition from the magic lantern to the talking picture, from the still picture or lantern slide to the synchronization of movement and sound. The radio as a vehicle of presentation has changed radically in the last decade. Newspapers and magazines have seen the value in using pictorial illustrations to break down monotonous columns of type, so that reading is made easier and quicker in the competition among all the demands on our time.

All instruction must adopt the improved methods of presentation if it is to accomplish its full purpose. Techniques for presenting dental contributions should take advantage of modern instruments for conveying ideas. Too many of our dental lecturers and clinicians are still in the "magic lantern days." They have not accepted modern methods of presenting their material either to their colleagues or to their patients. There are, of course and fortunately, exceptions.

An example of one prominent clinician who has been out in front in adopting modern methods is the President of the American Dental Association, Doctor George B. Winter. Unquestionably Doctor Winter has done fundamental research in the classification and technique for the removal of the mandibular third molar. Added to this acknowledged contribution, however, is his up-to-date method of presentation from which those who attend his clinics can receive practical and interesting instruction. His latest sound picture is an excellent example of modernity in teaching.

A mechanism, such as the talking picture, knows neither the fatigue of man nor his emotional instability which may affect his presentation of a given lecture. Poor ventilation, long hours of travel, physical indisposition—these do not affect the mechanism of a talking picture. Once the recording is made clearly and in proper sequence, the picture can be relied on to tell the story repeatedly in the same way, in the proper continuity, and without the loss of a single detail. The talking picture makes it possible to escape from the limits of the physical personality. That is to say, the person responsible for a technique or an idea can remain at home and continue with his work while simultaneously his thoughts are being transported and presented in many parts of the world. But there are still too many magic lantern clinicians in dentistry. It is to be hoped that many more of our colleagues will soon follow Doctor Winter's example wherever possible.

Frequently we hear men say, "Jones knows his stuff, but he can't put it across." What are some of the reasons that the lecturer fails to make his story plain? Somehow he neglects to tell what he had in mind to tell. He has repeated his ideas so much or thought about his subject so long that he has lost perspective. He takes for granted the background of his audience and does not stress what his listeners would consider fundamental; instead he elaborates on nonessentials. Either he covers the ground that has been gone over many times before or he passes too quickly over territory unexplored in the minds of his listeners. His material with which he is perfectly familiar may seem unorganized, without sequence. He dashes down one avenue and becomes lost in a blind alley at the end of it.

This, of course, opens the debated question as to whether a prepared paper makes a better presentation than an extemporaneous talk. The advantages and disadvantages of each are apparent and seem to depend entirely upon the individual ability of the lecturer. The talking picture offers an opportunity to incorporate the best of each and all methods and to eliminate discrepancies, extraneous matter, and disturbing and irrelevant asides. The talking dental picture would enable the clinician or lecturer to hear his presentation, to have a preview, and make essential corrections before a public presentation is made. The talking picture is peculiarly adapted to technical dental teaching where it is necessary for the action to be seen and the explanation to be given at the same moment. The sound picture is second only to actual clinical demonstration, and, in fact, has some advantages over the demonstration: it can be more carefully prepared and edited; it can be prepared to emphasize the important points; it can be presented in any community where a moving picture theatre with sound apparatus is available. Technical instruction can thus be given even if patients or special equipment are not at hand.

ANATOMY OF THE TOOTH CROWN: ITS RELATION TO PARTIAL DENTURES

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Connersville, Indiana

UNTIL a study is made, many of the natural retentive points on the tooth crown may be overlooked. A study must also be made to locate and decide the best method to overcome the native or acquired undercut surfaces in order that partial dentures may be inserted in a manner that will cause the least amount of strain on the clasp teeth and also minimize open spaces for the accumulation and retention of food. This may occur at mesial or distal surfaces of the clasp or bar region of the denture. If a mechanical means is used, such as dental model surveying, many slight undercuts become important and usable for the retention of the denture.

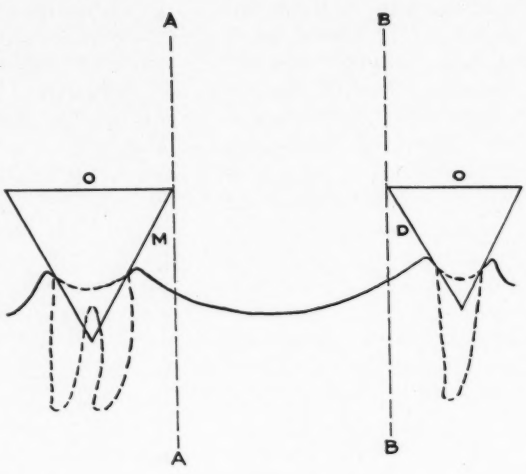

FIG. 1-A

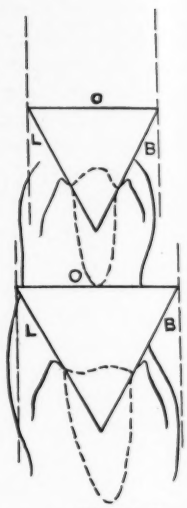

FIG. 1-B

Fig. 1—Conditions that must be overcome (undercuts or inclinations) before a partial denture can be placed in a patient's mouth. The retarding areas are not so pronounced as are shown in the drawings but are always present to some degree on one or more surfaces. The undercut areas must be treated for the mesial and distal surfaces on the master model, on the impression, ground to fit after the denture is completed; or weak clasp wings must be made to spring over the vertical angles of the clasp teeth. This will apply in all partial dentures.

Classification

There are three anatomic types of tooth crown: the square, the tapering, and the ovoid. There are also many modifications or blendings of one or more of the general classifications. For descriptive purposes the normal tooth crown is selected here, and all statements will be confined to a compromise of the three types. Although the crown form itself must be thought of and described as in normal position, many teeth change their positions and by so doing may change a normal retentive surface area or desirable undercut to one that will retard denture placement, or become an undesirable undercut surface.

Tooth Anatomy

Tooth anatomy, of which the crown form is only a part, as described by G. V. Black, is the accepted guide for use by dentists (Fig. 2). For the purpose of our subject, I will refer often to surfaces and angles of the tooth crown (Fig. 3).

Angles of Teeth—Every dentist is familiar with tooth crown surfaces. The angles of the teeth are of two kinds: line angles and point angles. The line angles, of which there are eight, are formed by the junction of two surfaces; point angles by the junction of three surfaces. For the present discussion, I will not need to refer to point angles, but line angles will be important. The crown portion of a tooth, as Doctor Black described it, may be likened to a cube; in using straight lines, the line angles stand out more prominently and without confusion. To save time and space, only one description is given. This will apply to all the teeth. Interchanging the terms incisal edge for occlusal, and labial for buccal, we

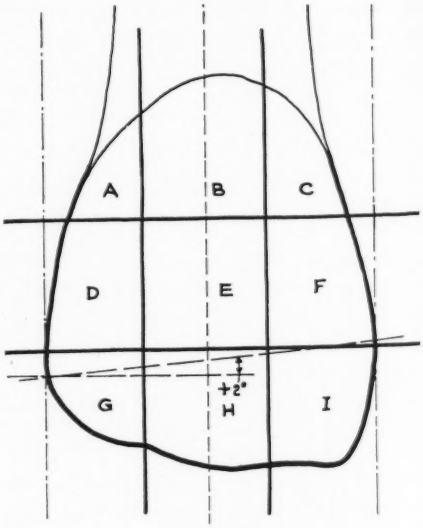

FIG. 2

Fig. 2—Division of surface of a tooth: A, gingival-distal third; B, middle gingival third; C, mesio-gingival third; D, disto-middle third; E, middle third; F, mesio-middle third; G, disto-incisal third; H, middle-incisal third; and J, mesio-incisal third. (Description by Doctor G. V. Black.)

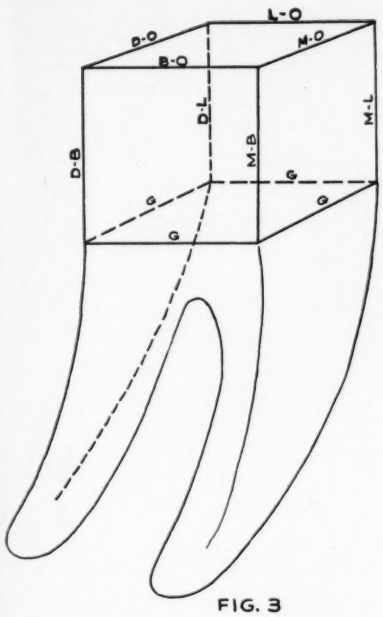

FIG. 3

Fig. 3—Line angles of the posterior teeth. It is the vertical line angles that help to form the mesial and distal undercut areas. They must be paralleled for placement or used for retention in bar clasp design in partial dentures.

then have the following line angles: mesio-buccal (M-B), mesio-lingual (M-L), disto-buccal (D-B), disto-lingual (D-L), mesio-occlusal (incisal edge, M-O or I), disto-occlusal (incisal edge, D-O or I), buccal-occlusal (labial, B-O or L), and lingual-occlusal (incisal edge, L-O or I). The gingival line or base of the cube will also be described.

Convex Surfaces for Clasp Retention—The problem of crown form for retention or retardation in designing partial dentures is simplified if the tooth surfaces are better understood. All surfaces of the crown form (eliminating occlusal surfaces and incisal edge) are either convex or concave. Any convex surface of the crown, no matter how slight, *can* be used for clasp retention. It may be necessary to cross the axial line, in which case we gain convexity from two directions, mesial-distally and inciso-gingivally or occluso-gingivally (Figs. 4, 5, and 6). The labial of the incisors and the buccal and lingual surfaces of the posterior teeth may be considered as a sphere, the radius changing with the type of the crown form. Concavity of a tooth crown form must be disregarded as of much assistance for retention and can be used only for stabilizing or reciprocation. Reciprocation plays as important a part in partial denture retention as does retention itself, and will be discussed later.

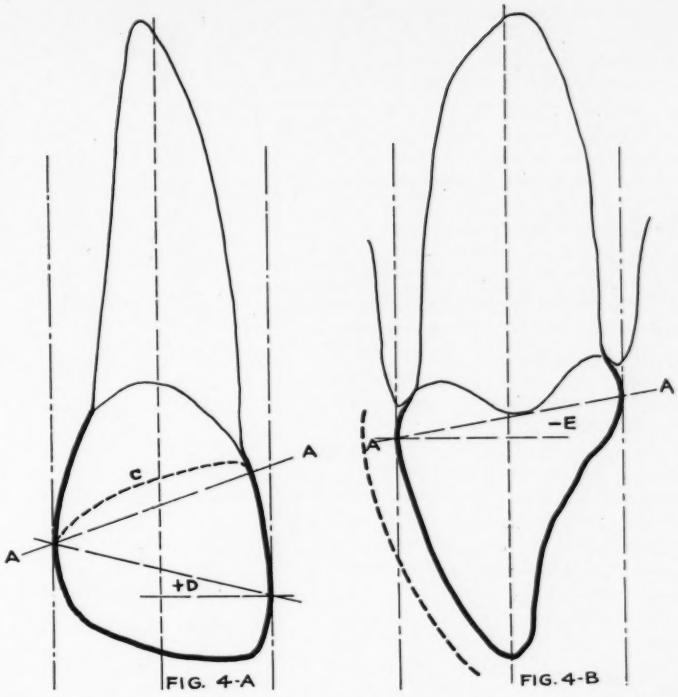

Fig. 4—Method for finding degree (plus or minus) of retention on the labial and lingual surfaces of an anterior tooth. Broken line C in Fig. 4, A indicates the curved line of retention on the labial surface. In this instance, the clasp must be carried diagonally and distally across the axial line and into the embrasure space above the greatest diameter on the mesial surface. Angle +D indicates the degree of plus retention from mesial to distal on the labial surface. Angle —E indicates the degree of minus retention on the lingual surface.

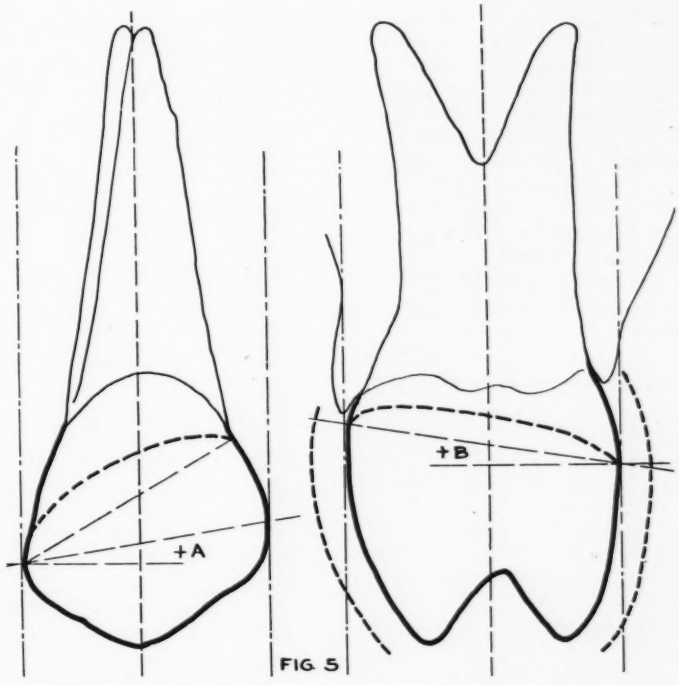

Fig. 5—Angles plus A and plus B indicate the degree of plus retention on the buccal and mesial surfaces of a bicuspid.

The labial surfaces of the anterior teeth present slight convex surfaces both mesio-distally and inciso-gingivally. This convexity may not reach more than from two to four degrees. The lingual surfaces of these teeth show a minute amount of convexity mesio-distally, probably less than one half of one degree, so slight that it can be disregarded for retention unless the clasps are carried across this surface past the axial or vertical angles and onto the labial surface.

Reciprocation—The lingual surfaces of the anterior teeth are used principally for rests, for the continuous type clasp, and for reciprocation. Reciprocation, which is extremely important in clasp retention, is for the purpose of preventing tooth movement. It must be located (if only one point is used) directly opposite from the point of retention. If two points are used, they must form the base angles of a tripod. It is also possible to use any part of the circumference of the tooth crown for reciprocation. The occlusal rest is always a modified reciprocal point. One wing of a clasp may be made strong, so that no spring is possible. This will act as reciprocation for the retentive wing on the opposite side of the tooth. This retentive wing is made delicate enough to spring into position.

The clasp strap, which is that portion at the mesial or distal surface, including the occlusal rest, extending gingivally to the gum ridge, may be made wide to a position past the vertical angles (Fig. 8). To become a satisfactory reciprocal point, the clasp strap must come in contact with the mesial or distal-occlusal of the tooth on its line angle. Reciprocation or retention may be placed upon either buccal or lingual surfaces. The vertical angles may be used for retention but the clasp wing must be carried past these angles touching the tooth surfaces to become reciprocation points.

Summary—1. The retentive wing of a clasp must be flexible to a point that will allow the clasp wing to open and glide or spring into an undercut to be held there by the reciprocation point as described.

2. My position is that *we should know* these points *definitely* before the waxing design is attempted. They can be shown by the carbon markings of a surveyed model. Many of the retentive areas can be seen on teeth of sufficient size and in normal position. Slight retention areas may be recognized only by surveyed carbon markings.

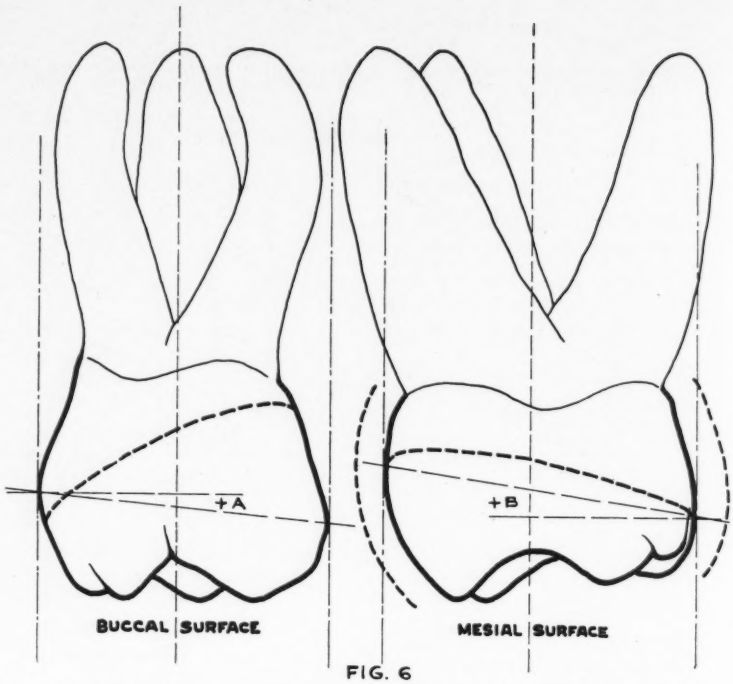

FIG. 6

Fig. 6—Angles plus A and plus B indicate degree of plus retention on a molar.

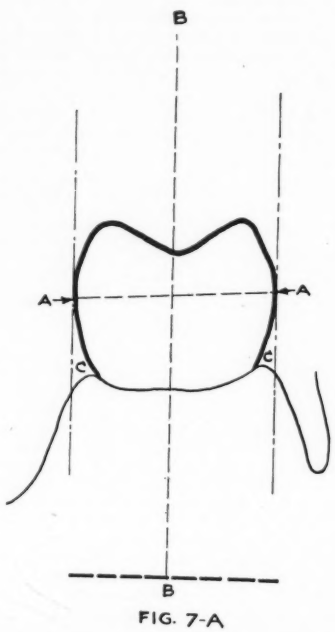

FIG. 7-A

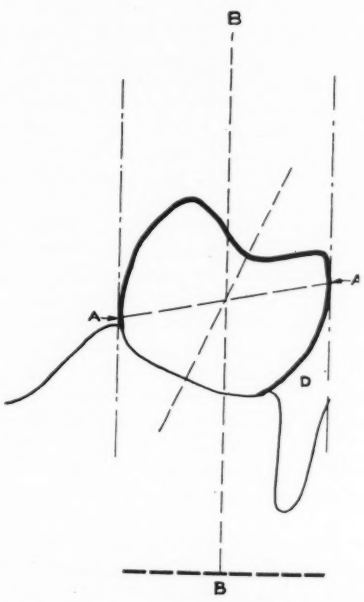

FIG. 7-B

Fig. 7—A represents a bicuspid in almost normal position. Retention may be gained on either the buccal or lingual surfaces shown in spaces C-C. The reciprocal point will be placed the same distance above line A-A as retention is placed below the same line, in direct bee line, and on the opposite side of the tooth. **Dental model surveying** will show carbon markings, thus removing any guesswork as to where the retentive or reciprocal points are located. B shows what will happen should the tooth have taken an abnormal position. Only the space D may be used for retention. The opposite surface can be used only for reciprocation.

3. These retentive areas change in relation to the degree of movement assumed in a position other than normal. If the tooth moves out of alinement in any direction, the surface toward which movement took place be-

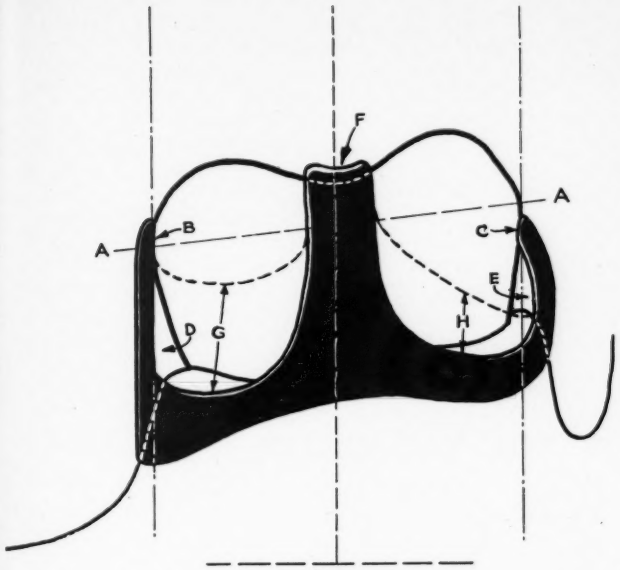

Fig. 8

Fig. 8—Surveyed clasp retained on a bicuspid or molar. Line A-A shows the greatest diameter of this tooth as established by the vertical angle of the surveying instrument. Arrow B indicates the reciprocal point. Arrow C indicates the retentive point of the clasp. Arrows D and E indicate the amount of space between the metal clasp and the tooth surfaces. In the surveying technique these spaces were filled with clay on the master model and entirely eliminated on the casting model. Arrow B or the reciprocal point furnishes no direct retention except in combination with arrow C or the retentive point of the clasp.

In placing the clasp on the illustrated tooth, the reciprocal point is rigid. It does not open. The retentive point (arrow C) is made to spring over the bulge of the tooth to drop into its predetermined position. **When these reciprocal and retentive points of the clasp are in their surveyed locations there is no strain on the tooth.** It will not develop soreness nor will it move to another position. The clasp is comfortable immediately after insertion.

Arrow F points to the occlusal rest. Below it and shaded to the gingival is the strap portion of the clasp. This is conventional type construction and does not prevent the open spaces on the mesial and distal surfaces which are the food trap areas. These food traps increase in size in direct proportion to the degree of malalinement and according to the anatomic type of the tooth.

The space between the broken lines G and H, if included in the strap portion of the clasp, would close or bridge the food trap area. The closing of such areas give comfort to the patient during the act of mastication. Only the smallest of food particles may be caught between clasp and tooth.

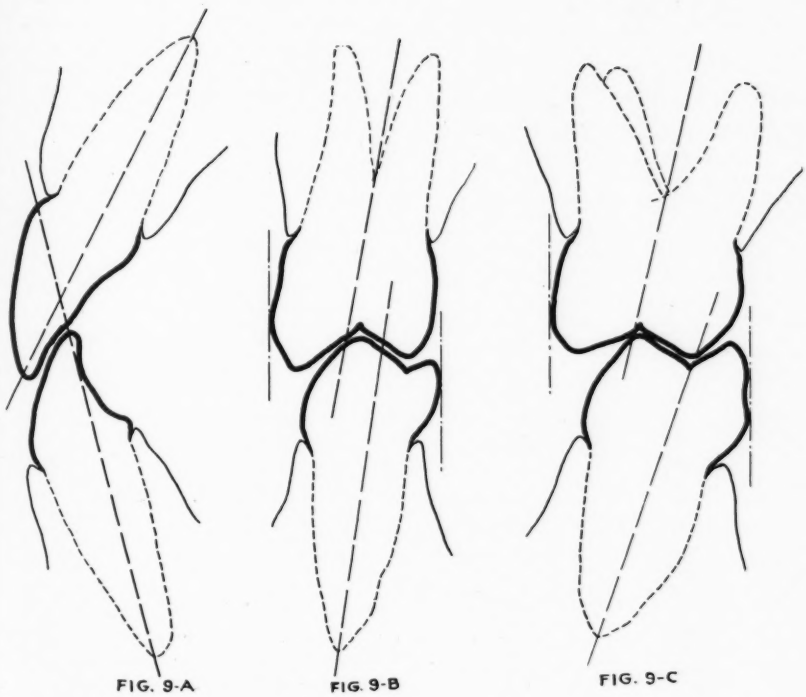

FIG. 9-A FIG. 9-B FIG. 9-C

Fig. 9—Normal position of the teeth in the arch. The anterior (A) protrude to the labial. In B and C the upper teeth protrude to the buccal and the lower incline to the lingual. The normal inclination or protrusion of the upper teeth furnishes additional retention for clasps on the labial and buccal surfaces at the expense of less retention on their lingual surface.

The normal inclination of the lower teeth furnishes additional retention for clasps on the lingual surfaces of the posterior teeth at the expense of less retention on their buccal surfaces. The protrusion of the upper teeth and inclination of the lowers play a part in the insertion of bilateral castings. Their unfavorable angles must be understood. In such bilateral castings compensation for such angles can be made only for the mesial and distal undercut surfaces.

In unilateral castings an opportunity is given for compromising angles on the mesial, distal, buccal, and lingual surfaces, by the ability to manipulate the master model.

comes more retentive but also may create an undesirable undercut. Under such conditions a food trap may develop. On the opposite side of the tooth the normal position for a reciprocation point will be changed (Figs. 7 and 8).

4. The reciprocation point must be directly opposite its retentive point. (This is not determined simply as bucco-lingually or labio-lingually, but these points must be on a line parallel to the base as shown by the mounted position of the model to be used in designing and constructing the case.)

5. The base mentioned must be vertical to the vertical angle used. Retention and reciprocation act as a straight line or object placed on a central pivot. When retention is lowered or toward the gingival, reciprocation is raised or toward the occlusal or incisal, on the opposite side of the same tooth; and if retention is moved upward toward occlusal or incisal, reciprocation is moved gingivally in direct line (Fig. 7).

Retention—1. The degree of retention on teeth in normal position, the long axis of the teeth being used as a vertical line to a main base is determined in the following manner (Figs. 4, 5, and 6) and:

(a) With a true drawing of accepted anatomy by measurement of any tooth surface, a line is drawn through the center of the middle third, parallel with the long axis of the tooth.

(b) Lines are also drawn parallel to this line touching the outer surfaces.

(c) A vertical line is then drawn at the greatest diameter of the tooth.

(d) Another line is drawn at right angles to the original line of long axis.

(e) The space between the line of greatest diameter and that vertical to the long axis will show the degree of retention provided by that surface.

2. From this reasoning (a) the labial surface of an anterior tooth may show only 2 per cent retention whereas the lingual surface may show 25 per cent minus retention (Fig. 4).

(b) The labial surface of a cuspid tooth may show 5 per cent retention, other teeth showing varying degrees of retention, according to their convexity.

(c) The buccal and lingual surfaces of the posterior teeth are more favorable for retention than are the anteriors.

(d) The buccal and lingual surfaces of the normal average first upper bicuspid shows only a small degree of retention as shown by the line drawing. In fact, the lingual surface may show minus retention.

(e) The buccal surface, owing to its slight convexity, will furnish some natural retention mesio-distally and occluso-gingivally.

(f) Convexity of these surfaces furnish increased retention if the axial line is crossed diagonally (Fig. 5).

(g) The upper second bicuspid is slightly less favorable to clasp retention than is the first, but mesio-distal and occluso-gingival convexity helps to retain a clasp upon this tooth.

(h) The degree of retention on the buccal and lingual surfaces of the upper first molar is not pronounced, and most of the retention is gained mesio-distally and occluso-gingivally.

(i) Retentive anatomy is similar in the three upper molars. Any difference is in favor of minus retention from first to third. The third molar, both upper and lower, is usually so devoid of retentive areas that retention must be found under the free margin of the gum tissue, the use of a frictional clasp, or by changing the vertical plane of the model (Figs. 6 and 11).

(j) Normal upper teeth in mouth position in line with their long axis incline labially for the anterior and buccally for the posterior. This trait furnishes increased labial and buccal retention occluso-gingivally at the expense of less retention for their lingual surfaces. The opposite is true of the lower arch. Their inclination is to the lingual in the posterior region, and their lingual surfaces furnish better retention from the standpoint of their long axis at the expense of less retention on their buccal surfaces. Only the lingual surfaces of lower posterior teeth may be discussed for retentive purposes. Lower anterior incisors show minus retention on their lingual, and slight retention on their labial surfaces (Fig. 9, A, B, and C).

(k) The lower incisors should seldom be clasped. They should be ignored except for placement of a continuous clasp on their lingual surfaces. It may be necessary to use a finger clasp just covering a vertical angle of this tooth, in extreme cases, to function more as a guide than for retention.

Without going into more detail, lower teeth answer similar descriptions as uppers, showing less retention from first bicuspid to third molar. Technically speaking, each tooth bears its own description and has its own identification.

Most of the mesial and distal surfaces I consider undesirable for retentive purposes, and provision must be made to fill in their undercut surfaces before designing a partial denture. Exceptions to this rule may be noted. Vertical angles and embrasure spaces are often used. The vertical angle is a retentive point for the bar-type clasp, the embrasure space for the bar clasp and the tip end of a circumferential clasp.

As they relate to retention and retardation of placement for partial dentures, the crowns of the teeth must be considered as in their normal anatomic positions and also in positions that they may assume owing to natural or unnatural conditions. They must also be considered in their classified types.

Retardation—In fully 90 per cent of the cases presenting for replacement of missing teeth by partial dentures, the teeth selected to carry clasps can be classified as having their tooth crowns out of normal position. Missing teeth have been out of the mouth for varying lengths of time, probably years. We know that after teeth are extracted, the tendency for those distal to the space created is to move toward the median line unless locked or retarded by opposite occlusion. Observation shows that the upper teeth, if relieved of mesial contact, tend to drift toward the mesial and buccal directions. The lower teeth drift toward the mesial and lingual. Because of occlusal strain, the posterior teeth distal to the space are pushed further in the four general directions. (The anterior teeth further to the labial.) Occasionally, remaining teeth, because of some unusual condition in occlusion are pushed distally. When these out-of-normal conditions occur, the retentive and retarding locations on the teeth are changed from their original points. As a rule, the normal retentive points become less retentive, with possible exception of the vertical angle which may become more retentive; the normal retarding locations become more pronounced. It often happens that a single molar remains. If it is an upper, it has drifted mesio-buccally; if a lower, mesio-lingually. Its original mesio-vertical line angles are now inclined mesio-buccally; as compared with the long axis of a bicuspid in normal position on the same side, if viewed from mesial or distal, their lines of long axis will form two lines resembling an X (Fig. 10). In such a condition the buccal surface of the molar and the lingual surface of the bicuspid become extreme undercut regions which will retard placement of a removable denture. The mesial and distal spaces between teeth and denture will, with ordinary procedure in case design, create extremely large food-collecting areas. This description is only one of many conditions found to retard placement of a casting. A dentist should be capable of overcoming or compromising this or any other condition found by mechanical survey.

Types of Tooth Crown Form

There are three types of tooth crown form: square, tapering, and ovoid. The square or so-called thick-necked type teeth have buccal and lingual surfaces almost parallel with the long axis of the tooth. There is a slight convexity on these surfaces mesio-distally. Whereas their mesial and distal surfaces have less pronounced undercut regions than either the tapering or ovoid, these show less diameter measurement at the gingival than at the marginal ridge, which causes a slight undercut region.

The tapering teeth have moderate convex buccal, labial, and lingual surfaces (except the lingual of the anteriors).

In the ovoid type, the mesial and distal surfaces present more distinct undercut surfaces (except the lingual of the anteriors). The mesial and distal surfaces show diameters at the gingival which are much less than at the contact points of the teeth. To allow placement under such conditions, greater spaces will occur between the teeth and the denture than in any other type classification.

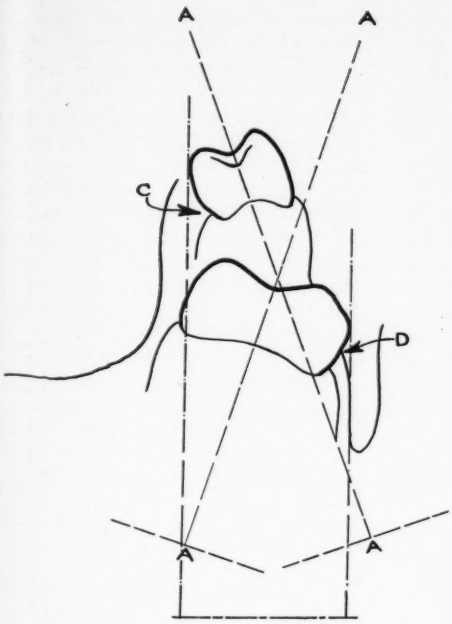

Fig. 10—View from the distal. The bicuspid is in normal position. The molar, because of the loss of the tooth in contact with its mesial surface and lack of sufficient occlusion in the opposite arch, has drifted heavily to the mesial and buccal.

Lines A-A represent their long axis which form an X. Extremely undesirable undercuts have been created on the mesial and buccal surfaces of the molar. It is in such conditions that (in conventional design and construction) distressing food traps are created. It required delicate paralleling of these teeth, compromising their extreme undercuts (as they relate to each other), and if the food traps are to be closed, they require wide clasp straps.

Properly to close the distolingual space, indicated by arrow C, it may be necessary to carry the lingual wing of the clasp below the tooth and on the palatal tissue, thereby creating a combination lingual clasp wing and saddle. This will favor the molar undercut on the buccal surface.

Such a clasp design places only the slightest amount of metal in contact with the teeth. On a surveyed model the clay-filled undercuts show the exact position for metal contact.

If the retentive and retarding areas are known, and provision is made, only the slightest amount of retention is needed to retain a partial denture, this will relieve tension and strain on clasp teeth, and give comfort to the patient.

Reciprocation

Reciprocation generally means something given in exchange. As applied to stresses or forces, we use the term in clasp design to mean something rigid, to prevent motion. In designing clasps, if both wings are frail there is only reciprocation or rigidity at the occlusal rest. In unilateral cases we do not have a firm or stable casting. Reciprocation is best used in the Roach bar and surveyed type clasp design. The undercut retentive region is determined in anticipation of the use of a spring clasp or bar. To overcome tooth movement, provision is made at a point directly opposite the retentive point at which metal comes in contact with the tooth; otherwise the slight spring would move the tooth in the direction in which the force was being applied and retention would soon be lost. The word *reciprocation* is now used to mean the prevention of or resistance to movement of the tooth caused by spring or pressure. This principal provides firm, long-life retention if only a small amount of the *available* retention is used. The *less* retention used the more comfort given the patient wearing the casting (Figs. 7 and 8).

Creating or Increasing Retention Where None Seems to Exist

It is possible to create or increase retention areas where none seems to exist when vertical model surveying is understood. This procedure becomes necessary in teeth of the square or thick-necked type or in any case in which definite undercut anatomy is not visible to the eye or shown by the instrument. This can be done on any of the vertical surfaces (except the lingual of the anterior teeth) by manipulating the master model in relation to the vertical plane of the surveying instrument (Fig. 11). Any mesial or distal surface used to create or increase retention must be free from contact with another tooth. By raising the anterior portion of the master model the posterior position is lowered and a definite undercut may be created on the distal surface of the posterior teeth (Fig. 11). The amount of retention can be measured by placing the vertical side of the working tool in contact with the distal surface of the tooth to be clasped. The undercut retention created may be maintained by proper placement of the reciprocal point for this retention on the opposite side of the tooth. Survey clasps play a game of teeter-totter. As retention goes down on the retentive surface selected, reciprocation comes up. As retention comes up, reciprocation goes down on the opposite side of the tooth and in direct bee-line (Figs. 7 and 8).

By lowering the anterior teeth of the master model and raising the posterior teeth, retention is created upon the mesial surfaces. As a rule I prefer that the retention be placed upon the distal surface.

In unilateral cases retention may be created or increased upon the buccal surfaces by lowering the model on the right or left side, as the case may be, and raising the opposite side. The vertical side of the surveying tool registers the degree of retention created and may be increased or decreased, as desired. Retention upon

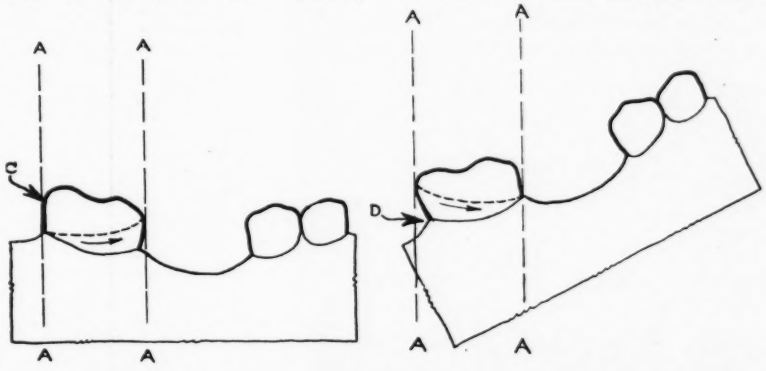

FIG. 11-A FIG. 11-B

Fig. 11—With dental model surveying, retention may be created and placed on a selected tooth where no visible retention is indicated, owing to unfavorable anatomy or position of the tooth or teeth. A shows a master model in an arbitrary position. Lines A-A are vertical to the main base of the surveying instrument.

In A the only visible retention is a small amount on the mesial surface of the molar.

As shown in B by changing the model to conform to the vertical angle of the surveying instrument, a decided undercut (which can be controlled) can be created on the distal surface of the molar. By referring to Fig. 7 and its description, the change of position of this tooth, regardless of whether it was due to forces within the mouth or to the change of position of the model, is only a change of the retentive and reciprocal points. The angle or path of insertion has been changed.

We now have ample retention as shown at arrow D to retain any type casting. The direction of the clasp is from distal toward mesial in B.

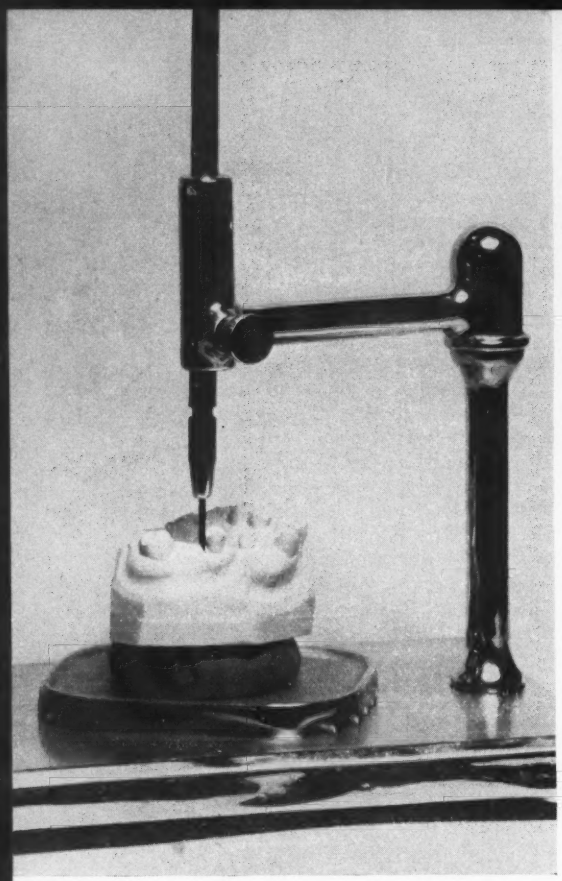

Fig. 12

the lingual surfaces may be created in the same manner in unilateral cases.

When retention is created upon a surface, only reciprocation for that retention can be used upon the opposite side of the tooth.

In bilateral cases retention may be created, or compromised only upon the mesial and distal surfaces.

In unilateral cases retention may be created upon any exposed surface.

Too Much Retention Less Desirable Than Too Little

Too much clasp retention will cause a casting to spring or snap into position. The snapping into place causes both the dentist and the patient to believe the case to be perfect. It may be *far* from perfect. A casting with clasps of the type mentioned usually has frail, delicate clasp wings. These wings spring outward until the greatest circumference of the tooth crown is reached. When over the bulge the clasp wings spring or close rapidly into the undercut, the sound produced is that of the occlusal rests coming in sudden contact with the tooth crown occlusal rest surface. For fear of a failure in an unknown, improperly balanced or stabilized casting, use is made of all the retention that can possibly be found. In circumferential unsurveyed clasps, attempt is made to place retention on both wings. These clasp wing tips being weak, there is little resistance offered to prevent the teeth from moving mesially or distally over a period of time. The occlusal rests which are usually resting upon an inclined plane, slide toward these mesial or distal surfaces, causing a settling of the casting.

Settling causes irritation on the ridges and under lingual and palatal bars, and repeated adjustments and grindings become necessary as the clasped teeth continue their movement. Such cases are not long-lived and are disappointing to both patient and dentist. I believe these cases are not successful because of the haphazard manner of placing the clasps and the lack of proper reciprocation for the retention used.

As has been explained, *reciprocation holds a clasped tooth* in the original position held at the time the impression was taken. *Retention holds the casting* in its proper position. The spring property of the clasp is only used at the time of placement. After the casting is in position there should be no pressure from either spring clasp wing or reciprocal point. The casting stays in position only because there is no place else to go, and not because of a gripping of the tooth by the clasp wings. A casting must be free of any stresses before it can be comfortable.

If the casting can be left out of the mouth for two or three days, and can then be placed in position without causing immediate strains or stresses upon the teeth, it is positive proof that *over-retention* has not been created and that the casting does not require movement of the teeth to become comfortable. Surveyed castings are usually comfortable to the patient immediately after insertion and require only minute adjustment in fitting. Deviations are so slight that adjustments or fittings may be accomplished by the use of carbon paper markings upon the inside of the clasps rather than by severe readjustment with contouring pliers.

Advantages of the Vertical Type Surveyor (Fig. 12)

Model surveying, as we have heretofore understood the term, is a means to scribe carbon markings around the circumference of the teeth to be clasped, as a guide in placing wax clasps upon a casting model. The position of the model at the time markings were being made was either an arbitrary one or determined by the long axis of the teeth. Such procedure limits the study of the master model to determine the most suitable position for the survey. This is true if the master model is held in a rigid position.

Surveying with an instrument of the horizontal carbon marking type restricts movements of the master model for study. In this instance, study means the power to manipulate or rearrange the master model upon a plastic base. Horizontal markings can be used only to show the greatest circumference of the teeth.

In a surveyor of the vertical carbon marking type (Fig. 12) in which the master model is mounted upon a plastic base and upon a movable subbase, there are unlimited facilities for study.

Inasmuch as all removable castings or partial dentures are inserted into the mouth in a line approximately parallel with the long axis of the teeth, the vertical type instrument predetermines the manner of placement. In other words, it selects the path of insertion. The master model having its mounting upon the aforementioned plastic base, its position can be changed and manipulated to determine the most suitable position in its relation to the vertical angle of the instrument.

By placing the vertical side of the vertical tool in contact with a vertical surface upon the tooth to be clasped, the contact point will show the location of the line of greatest diameter for these teeth, and in relation to the vertical angle being used, it will also show how much retention is provided upon the buccal, lingual, or labial surfaces which are the retaining surfaces for circumferential clasps. It will also show the undesirable undercut regions upon the mesial and distal or any surface out of normal position. Provision must be made to parallel these undesirable undercut surfaces before the casting or denture can be placed in position.[1]

Jemison Building.

[1]Wills, N. G.: Dental Model Surveying, DENTAL DIGEST, 41:222 (July) 1935.

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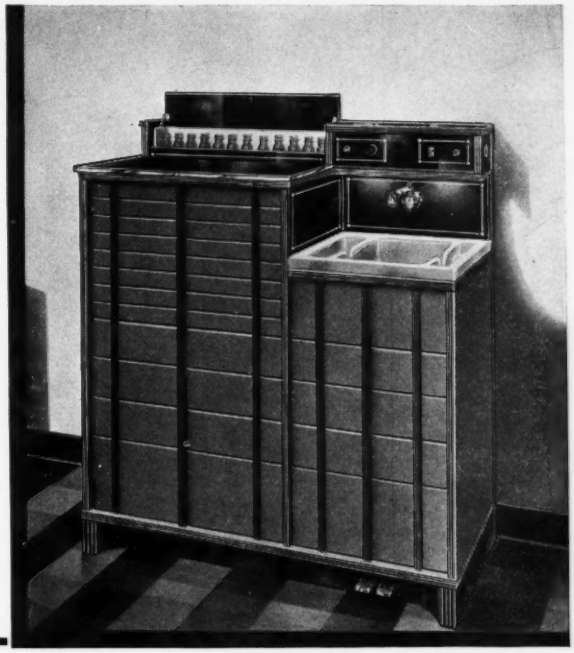

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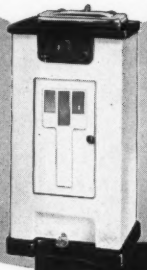
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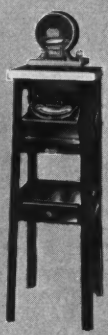
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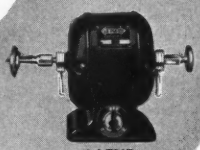
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FREDERICK H. DONER, D.D.S. was graduated from the University of Pennsylvania in 1923. Doctor Doner has previously contributed to the dental literature. He is a member of the American Dental Association. New York State, Fifth District, and Jefferson County Dental Societies, and maintains a general practice.

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RALPH W. EDWARDS, D.D.S. is a graduate of the Kansas City-Western Dental College where he is professor of oral surgery. Doctor Edwards has appeared on the programs of many dental societies and has been a frequent contributor to the dental literature. He is a member of the American Dental Association and component societies.

GEORGE W. MATTHEWS, D.D.S. and B. S. in dentistry (Northwestern University, 1927) and M. S. in biologic research (Birmingham Southern College, 1931) wrote a short article for THE DIGEST in April, 1934, suggesting the use of an oral surgery sponge. In this issue Doctor Matthews appears as co-author with Doctor Bradford. Doctor Matthews was awarded the Rockefeller Research Fellowship to Yale University in 1931. He is a member of the A. D. A. and component societies, and the American Association for the Advancement of Science, and is a member of the staff of Hillman, St. Vincent's, and Baptist Hospitals. Doctor Matthews is entering the specialty of oral surgery and diagnosis with Doctor Bradford next fall.

HARRY BRADFORD received his D.D.S. in 1905 from the Birmingham Medical and Dental College, and took a postgraduate course in oral surgery at Northwestern University in 1930. Doctor Bradford is a member of the A. D. A., and component societies, the American Society of Oral Surgeons and Exodontists; he is chief of the dental surgery staff of Hillman Hospital and attending oral surgeon to St. Vincent's, South Highland and Baptist Hospitals. Doctor Bradford practices oral surgery exclusively.

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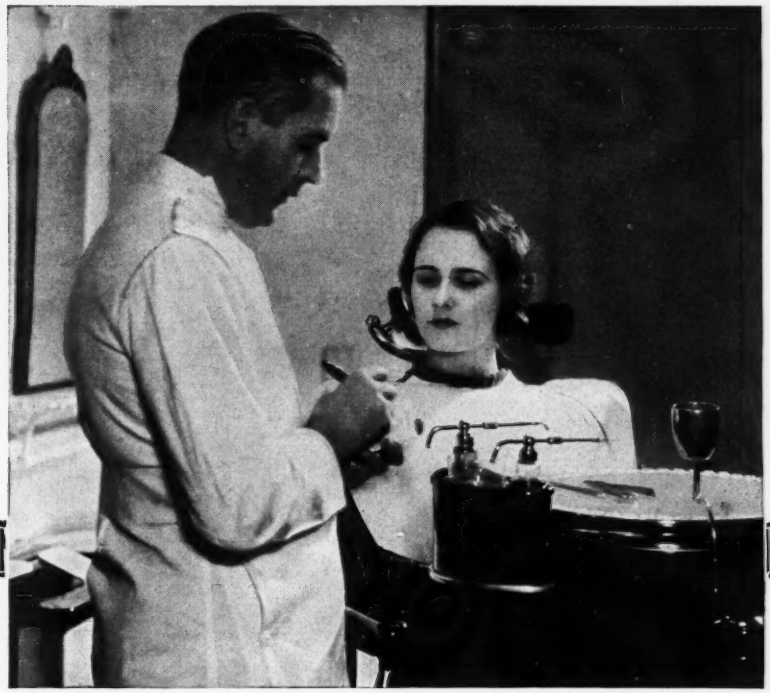

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SNAKE VENOM AND ITS USE IN DENTAL HEMORRHAGE

By J. DRAPER CAMBROOK, M.R.C.S., L.R.C.P., L.D.S. Eng. (*Adapted from the Proceedings of the Royal Society of Medicine, Section of Odontology*, 29:19 [*January*] 1936.)

At St. Bartholomew's Hospital last year Doctor R. G. MacFarlane carried out research into the action of snake venom on the coagulation time of hemophiliac blood.[1] With the cooperation of Doctor Barnett, of the Zoological Society, the venoms of the poisonous snakes in the Zoological Gardens were investigated. The remarkable power of the venom of Russell's viper to coagulate hemophiliac blood was so striking that its use as a therapeutic agent was at once suggested and its action further investigated. The activity of various dilutions was then studied.

EXPERIMENTAL RESULTS

1. It was found that the venom had to be diluted ten times to double the coagulation time. This is important in practice, as any local hemostatic is constantly being diluted by the issuing blood.

2. Experiment showed that the venom in 1:10,000 dilution could coagulate ten times its volume of hemophiliac blood in less than twenty seconds.

3. When it was applied to experimental wounds in this strength, the venom was neither irritant nor toxic, and did not delay the process of healing.

4. The minimum lethal dose would only be contained in 4.2 liters, and moreover it would be necessary for this amount to be absorbed for it to be effective.

5. In view of the fact that the venom was to be applied to raw areas, its sterility was necessary; as it was found that heat was destructive to the coagulant, sterilization was accomplished by filtration.

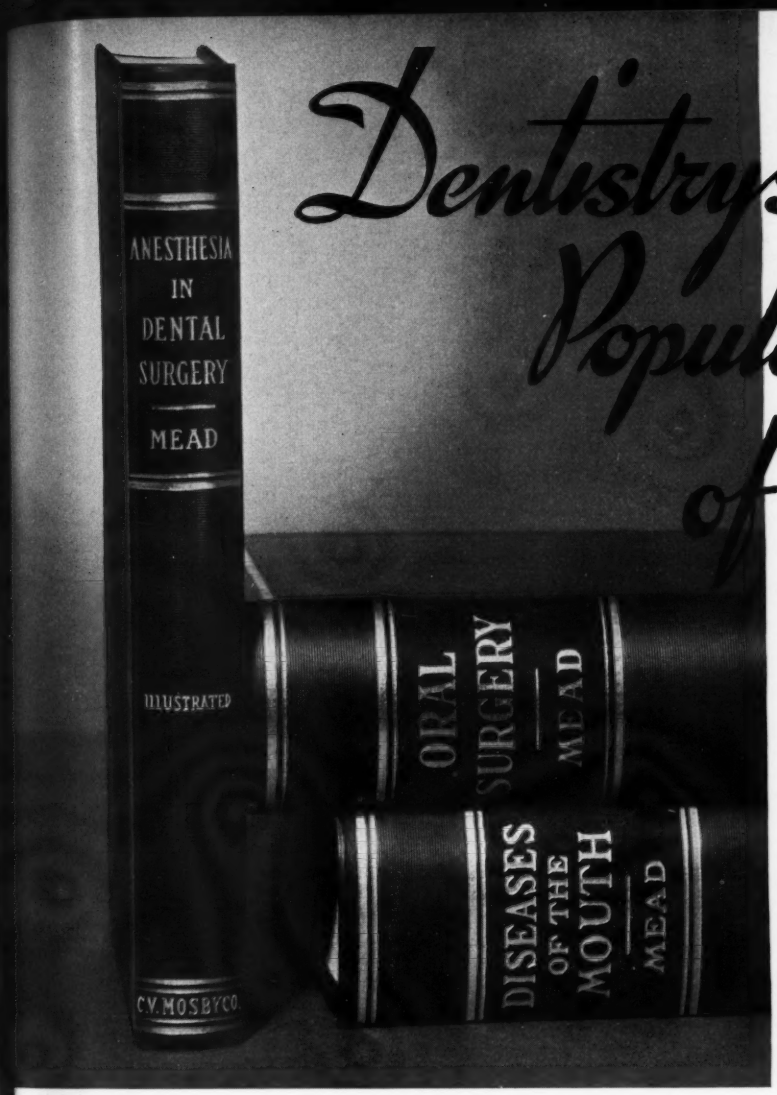
6. At first the venom was put up in solution, but this was found to be unstable unless kept in a refrigerator. This difficulty was overcome by evaporating the venom with saline in ampules under reduced pressure, so that the addition of water gave a 1:10,000 solution in normal saline. Thus a stable sterile product was ensured, and it is in this form that it is now used.

7. The action of the venom in so markedly diminishing the time of coagulation, not only of hemophiliac blood, but of any blood, is not thoroughly understood, but it acts as a form of thrombokinase.

8. The clots so formed are tough and elastic, in marked contrast to the feeble, friable clots of hemophiliac blood, and it was found that the fibrin separated more quickly, giving a short fibrin time.

9. Doctor MacFarlane also investigated

[1]MacFarlane, R. G.: The Treatment of Hemophiliac Hemorrhage, St. Bart's. Hosp. Reps., 68, 1935.



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the effect of temperature on the coagulation time and fibrin time of normal blood, hemophiliac blood, and hemophiliac blood with the addition of 1: 10,000 venom. Graphs from his results demonstrate the desirability of using the venom hot.

Method of Use

1. In a case of a reputed bleeder, from whatever cause, a detailed blood examination to reveal the cause of the tendency to hemorrhage will always be found useful in considering treatment.

2. The tooth or teeth may be removed with a local anesthetic, since the early manipulation of the wound is not accompanied by pain. Block anesthesia is preferable, as injection near the socket causes some local injury, however slight.

3. After the extraction a short, squat plug of cotton-wool is prepared, soaked in hot venom, and used in this manner:

a. Pressure must be applied to the edges of the socket only, and not down into the socket, so that the plug becomes mushroom-shaped and acts as a mechanical obstacle to obstruct the flow of blood. The pressure on the plug causes the venom to be squeezed out and to mix with the blood in the socket so as to form a tough, firm clot.

b. In general, a gauze roll is preferable for the patient to bite upon, instead of a mechanical appliance which keeps up a constant pressure which can do a great deal of injury to the socket, and also cause extravasation of blood into the tissues. In certain cases a "dental plate" is more desirable, but each case must be decided on its merits.

c. The plug is left in position until it falls out, and if hemorrhage occurs another plug is substituted.

d. It may be necessary to replug many times before the desirable state is reached, but hemorrhage can be controlled finally by this method.

4. Treatment varies with each case. In certain cases in which there has been gross sepsis, oozing between the application of plugs may be allowed, because the loss of blood can be made up by transfusion if necessary. This will prevent additional trauma to the socket, as the less the wound is disturbed the better.

5. Suturing leads to extravasation of blood into the tissues and stitches are liable to cut out; they should only be used when there has been a tear.

6. In all cases in which hemorrhage has gone on for days, it has followed the extraction of septic teeth. The eradication of sepsis around the teeth must be carried out assiduously. After careful scaling, venom being used to arrest the bleeding, the gums should be treated with 25 per cent silver nitrate. This removes most of the sepsis and reduces the inflammation of the gums.

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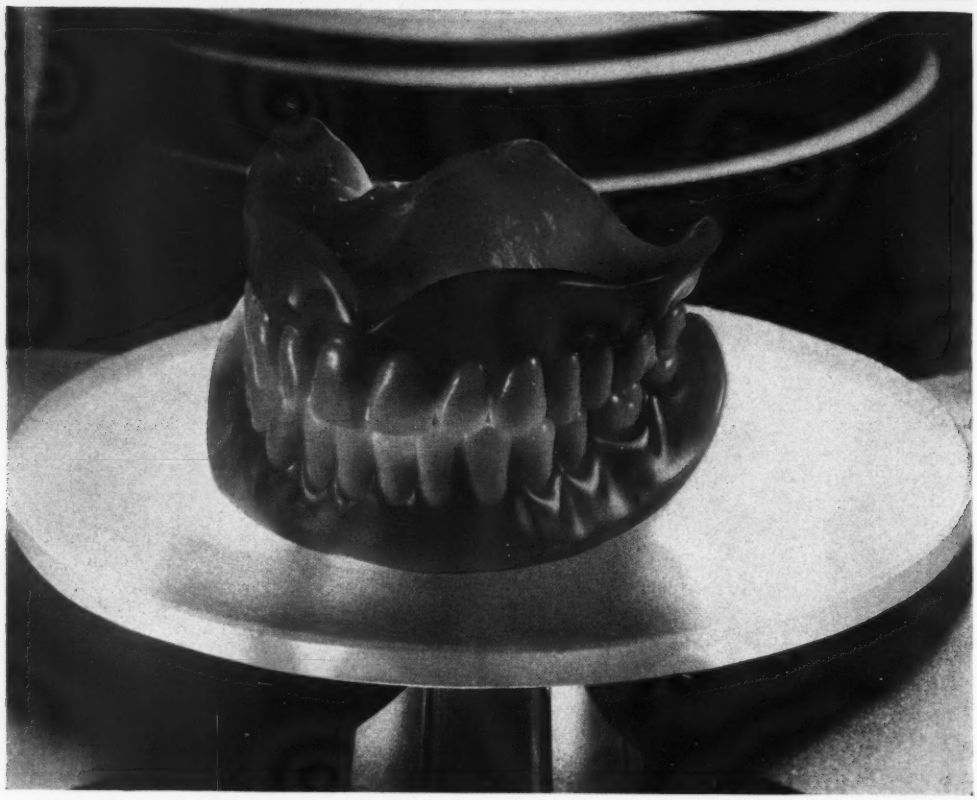

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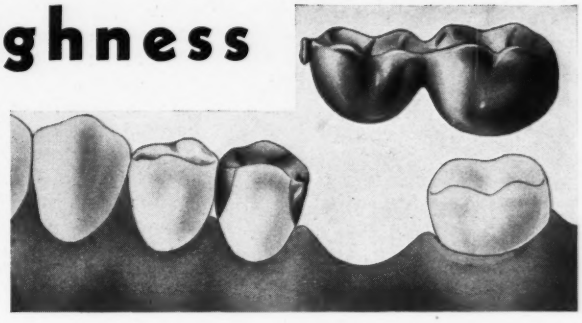

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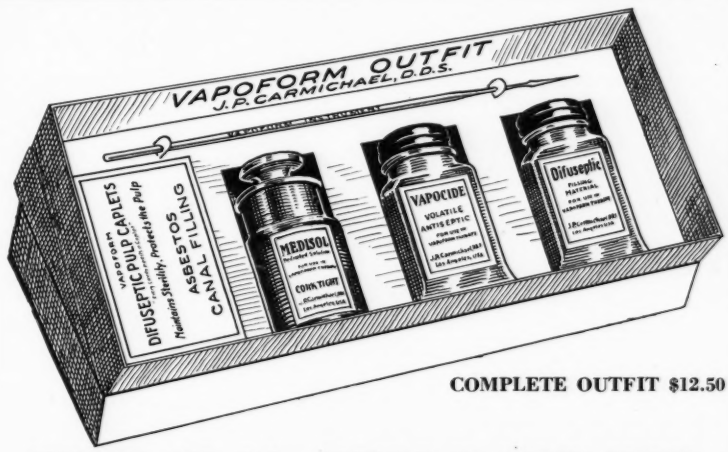

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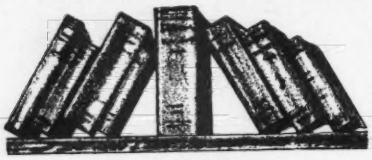

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"You know, San Francisco is a man's town, as it has been since the days of the Gold Rush, but a man's town which women love. I know Elsie'll like it. Both of you will quickly sense its character in the hotels, the restaurants, on the streets, in the art centers, and in the before-dinner and late evening meeting places and clubs.

"Let Elsie and the boys discover the city for themselves one day while you and I and our confreres are absorbed in the details of the Convention. Set her adrift among the shops. They're really fine, comparing favorably with the best in New York and Paris. A number date back to the Gold Rush days.

"A store on Post Street, for instance; is world famous. It is a veritable museum of Oriental objects d'art, jade, rare porcelain, and contemporary art treasures. Elsie will love browsing through the store. They have gathered the gifts of the world — Cambodian relics from Angkor-Vat; stones from the Orient; rugs from Persia; glassware from the finest factories in Europe and America, and many other fascinating objects. Tell her that visitors are welcome to take their time in seeing the things in this engaging store.

"The bazaars in Chinatown, too, will lure her. They are filled with wondrous silks and china, rich brocades—and an endless variety of curios.

"We'll get Elsie a guest card at one of the women's athletic clubs. She'll meet many interesting women in the clubrooms and undoubtedly some of them will undertake to show her around the city while we are at the meetings.

"One day I'm going to give the four of you a treat—a five-cent treat, by the way, for that's what it costs to ride the street-cars in San Francisco. Have you ever ridden on a cable car, Harry? Well, the cable car had its beginning in San Francisco back in the 'Seventies, and despite the coming of the electric car, cables still persist here. In most other cities they have disappeared.

"Once you look up at our hills you'll readily see why the cables are necessary. We'll take a ride on the cable car that climbs steep California Street. It traverses the financial section, then crosses the main street of Chinatown, and soon reaches an apartment and hotel district on the very summit of the hill. This is Nob Hill, named for the early-day 'nabobs,' or millionaires who had mansions on the Hill. Many of these estates are still here today—the Pacific Union Club; the Fairmont Hotel; the Stanford Court Apartments; the Mark Hopkins Hotel, and others.

"As the city seems to drop away in back of you, as the car silently approaches the hill, you get one of those sweeping vistas that San Francisco is known for—the great Bay and its ships, the bridges, and the East Bay residential sections.

"Another cable car takes you up the Powell Street hills, and out to Fishermen's Wharf. There's a spot for you! Gaily painted little boats of the fishing fleet lie at anchor in the blue lagoon. Here is a bit of the far-away shore of

"I've used BS Polishers for years . . . and now they're better than ever. This new flair in the cup certainly keeps the grit from getting in the handpiece. It's compact, too, and doesn't require any additional space. I like the anchorage construction because the polisher simply can't pull away from the screw.

"I had nothing but compliments from my patients! The BS does a fine job of cleansing teeth. They contact all surfaces and clean under the free margins of the gums. Fast, gentle and absolutely safe. You see, there's no exposed metal to touch the tissue or cut cheeks.

"And SAY! They cost only a nickel apiece in dozen lots. YOU ought to try them!"

YOUNG invites you to write for your FREE SAMPLES of BS Polishers today . .

YOUNG
DENTAL MFG. CO.
4958 SUBURBAN R.W.
ST. LOUIS, MO.

(*Please use coupon on page* 179)

If the toothbrush is an important aid in the fight against caries, it well deserves a dentifrice of the highest scientific excellence.

SQUIBB DENTAL CREAM

The Priceless Ingredient of Every Product is the Honor and Integrity of its Maker

E. R. Squibb & Sons, Dental Department,
3205 Squibb Building, New York City.

Attached hereto is my professional card or letterhead. Please send me a complimentary package of Squibb Dental Cream.

Name_____

Address_____

(*Or please use coupon on page* 179)

The Antiseptic Dentifrice

"THE LAST VISIT paid to me by the lamented Miller was just as he had completed the experiments which gave rise to his memorable article on the Wasting of Tooth Tissue, published in the Dental Cosmos in January, February and March 1907. We went over the whole subject together, and I found that he by experiment and I by many years of writing prescriptions for tooth powders and antiseptic washes and watching their effect, had come to the same conclusion. We were both convinced that every form of grit must be excluded from any preparation designed for cleansing the teeth. That two indispensable cleansing ingredients were precipitated chalk and soap, and that our effort should be largely directed to the destruction and inhibition of bacteria, since in these alone appears to be the source of disease."

This statement made by Dr. N. S. Jenkins, a noted American dentist practising in Europe, described in part the close of his long association with Professor W. D. Miller who first associated bacteria with dental decay. For many years Dr. Jenkins in collaboration with Professor Miller had been striving to perfect a dentifrice that would not only cleanse the teeth but that would destroy the destructive mouth bacteria. After the death of Professor Miller, Dr. Jenkins continued his work and finally in London, 1908, at the annual meeting of the American Dental Society of Europe of which he was then president, Dr. Jenkins gave the formula of Kolynos to the dental and medical professions.

Kolynos Dental Cream, which destroys from 80 to 92 per cent of mouth bacteria with each brushing, may be regarded as a valuable and safe means whereby the patient can properly clean the teeth and at the same time combat the deleterious action of the bacteria without the slightest injury to the delicate mouth tissues.

78

Italy. You'll see swarthy Italians tinkering with engines, and repairing their great brown nets which are flung over the wooden railing along the wharf. Some of the men sing while they work, for here they are happy, contented.

"Fresh sea-food delicacies, crab, lobster, shrimp, are served in blue-and-white sidewalk grottoes along Taylor Street. And on that street, too, you'll see the cauldrons, steaming merrily, in which the shell-fish are cooked.

"I'll promise you, Harry, your San Francisco trip will be a continuous adventure. There is so much to see and do here by the Golden Gate! And you'll return home enthusiastic—ready to tackle any problem!

"After all I have said, you may still ask what it is that makes San Francisco one of the world's most fascinating cities? Is it the long Embarcadero with its ships and men from all the seas; its interesting foreign colonies, including the largest Chinatown outside of China; its towered hills in their superb setting of bay and sea, or is it something in the spirit of the city's history that informs its life? Maybe you will find the answer when you come here in July to attend the annual convention of the American Dental Association.

"For ourselves we find a thousand elements combine to give this city fascination. And yet if we attempted to describe them, we should miss the most important one of all. It is all-pervasive.

"Nature, of course, has richly endowed the city. Located on a peninsula between the vast expanse of San Francisco Bay and the Pacific Ocean and edging the south side of the Golden Gate, San Francisco rises on many hills. Beyond the blue waters of the bay and strait, and southward from the city, rise other hills, forming with the sky an impressive cyclorama.

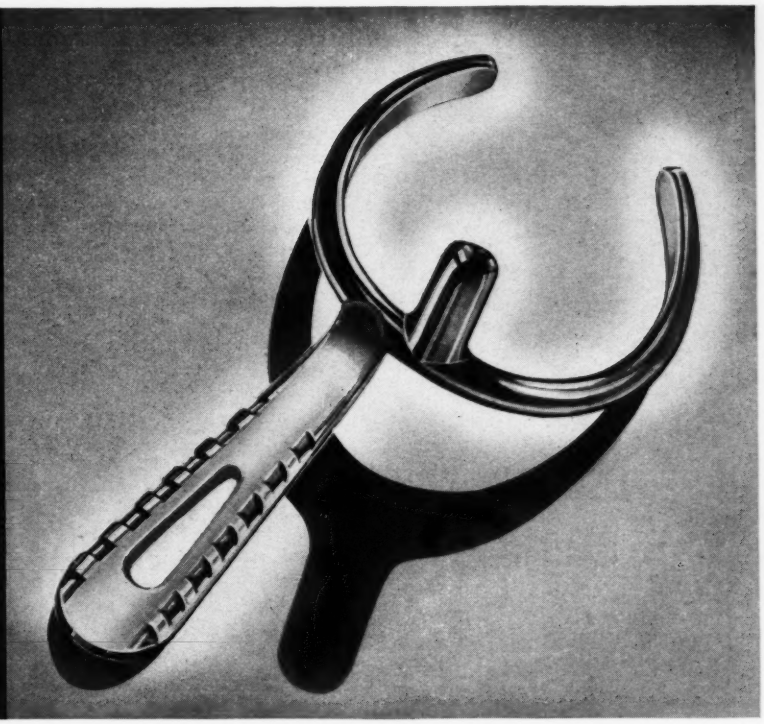
"The cerulean sky is flooded with sunshine nearly every day from May to October, at least, and studded at night with stars. By day, the sunlight playing on the surrounding hills and water and on the hill-climbing structures of the city, reveals them in ever changing aspects of shadow-forms and color. The scene is always fresh, vivid, vibrant with interest.

"But let us come into the town; let us say, to Telegraph Hill, a vantage point near the middle of the convex waterfront, and there begin our closer observations. This is historic ground. From this hilltop in the early days, the wild, mad days of 'Forty-Nine, a semaphore was used to advise the people in the town below when each vessel with its freight of adventurous men was approaching through the Golden Gate.

"Reaching the top, we find ourselves within a balustraded, wide, circular enclosure, commanding broad views of city,

In just a Few Moments

IT'S PERFECTLY ADAPTED...



AND WHAT A CLASP IT IS!

The Williams NEW Ready Made Clasps are accurately curved to fit tooth contour, and supplied to you in their softest annealed condition. Thus your work of adapting is simplified to a few minutes time.

These new clasps are made in one piece of hard, springy gold-platinum alloy—unconditionally guaranteed not to buckle or break.

In these new Williams Clasps, the juncture of tailpiece and clasp is stronger, the occlusal rest is longer, and the special slotted end assures firmer retention in vulcanite or gold... Six sizes (both rights and lefts) to fit any tooth. Ask your dealer or write for literature. Celluloid measuring guide free on request. Williams Gold Refining Co., Buffalo, N. Y.; San Francisco, Calif.; Fort Erie, N., Ont.

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WILLIAMS
Ready Made
SLOTTED
END
CLASP
HALF ROUND
14 GAGE
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a product of WILLIAMS *Research*

Mrs. Jones cancels *an appointment*

Little Gloria's dancing class, Martha Smith's wedding, a headache, an overlooked previous engagement—she might have any one of a dozen excuses. It is easy for Mrs. Jones to consider other things of more importance than an appointment with her dentist. Not that she doesn't appreciate her need for dental care. But the fact is, Mrs. Jones dreads the very thought of a dental treatment.

Mrs. Jones is one of the thousands of people whose appreciation for the health value of dentistry is overshadowed by their fear of pain and discomfiture. They offer a great profitable market for dentists' services, once their fear of pain has been overcome.

McKesson analgesia makes dentistry easy and inviting to these people. Pain and discomfiture are eliminated. Apprehension is replaced by confidence and a real appreciation of the health value of regular dental care.

Dentists who operate with McKesson analgesia know its value. They have seen the results reflected in practice growth and in the confidence and loyalty of patients. They have discovered that the *pain factor* is an important consideration in building and maintaining a dental practice.

McKesson literature will tell you more about this important subject. Return the coupon. There is no obligation.

McKesson Appliance Co.
Toledo, Ohio

Please send me literature on McKesson analgesia

Dr. .....

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City .....State .....

You will find another coupon on page 179.

bay, and Golden Gate. Two miles away, in the bay, is Alcatraz Island, site of the famous federal prison. To our right is the world's longest bridge, now building across an eight-mile stretch and tunneling through an island in its path, to connect San Francisco with the Eastbay shore. To our left, we see another bridge, flinging the longest single span in history across the full reach of the Golden Gate—more than 4,000 feet from tower to tower, 250 feet above the famed blue waterway.

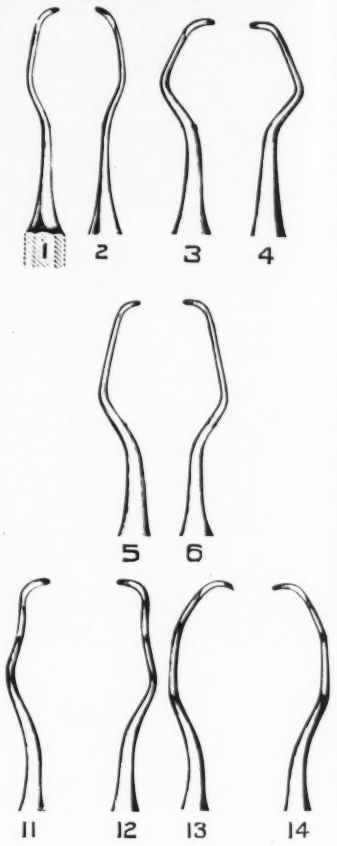
"From one side we look down on the decks of ocean-going vessels, transferring cargo at the docks. From another we overlook the descending housetops of the Latin quarter that almost girths the hill, to the tall, graceful spires of the Church of St. Peter and St. Paul and the adjoining park of weeping-willows; down in the valley of North Beach, before our eyes travel upward to the apartment-house towers atop the Hyde Street Hill. Other tower-crowned hilltops confront our view in color-revealing sunshine and softening shadow. And to our nostrils comes a sea-tanged breeze.

"At our backs, from the center of the enclosure where we stand, rises the tall, gleaming white Coit Memorial Tower, erected from a bequest by Mrs. Lillian Hitchcock Coit, famous San Franciscan whose especial whim, in the early 'Sixties, was following the volunteer fire department. Later we shall enter the tower, see the modern murals there by forty-six Californian artists and then take the elevator to the top for more perspectives.

"Here, on Telegraph Hill, there comes to us another inkling as to a reason for San Francisco's fascination. It is that the city lives in intimacy with its past. Everywhere, as you will see, there are reminders of its genesis and growth. The days of the Dons, the era of Gold, the days following the fire of 1906—all are remembered and have their influence on the life of the city today, giving it depth, tolerance, and a quality of timelessness. San Francisco lives for today, mindful of its past, proud of its present, and confident of its future. In addition to its time-sense, it has a world-sense derived from its sea-port associations, and from its cosmopolitanism, for its foreign colonies preserve the cultural flavors and traditions of many other lands. It has the character of a true world city, and this is another reason for its fascination.

"When you come to San Francisco in July, to attend the American Dental Association Convention, you will sense immediately the unique character of the city. If you approach it from the bay on a ferry boat, you will be imbued with a sense of high adventure as you look upon its hills, its mighty bridges, and the ships along its waterfront. And your expectation will be heightened when you reach

Simplify Treatment of Pyorrhea



GRACEY'S PERIODONTAL FINISHING CURETTES

The design of these instruments was suggested by Dr. Clayton H. Gracey to encourage and facilitate periodontal treatment. Dr. Gracey supervised the details of initial construction. The instruments were approved by him in every detail, before being presented to the profession.

Corona High Test Carbon Silicon Steel which is used in the manufacture of these instruments has proven to be the only alloy of steel qualified for the manufacture of these extremely delicate instruments, as it can be successfully manipulated to insure the vital points of quality—such as rigidity, strength, hardness and temper.

The selection covers all requirements for the successful treatment of Pyorrhea and Subgingival Currettage, as practiced by the specialist and the general practitioner.

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3118 N. Rockwell St., Chicago, Ill.

Please send me a set of Gracey periodontal finishing curettes.

Dr. .....

Address .....

City .....State.....

Dealer.....

(*Or please use coupon on page* 179)

its lively streets, and again in your hotel, which will probably be one of the many here that are known among travelers.

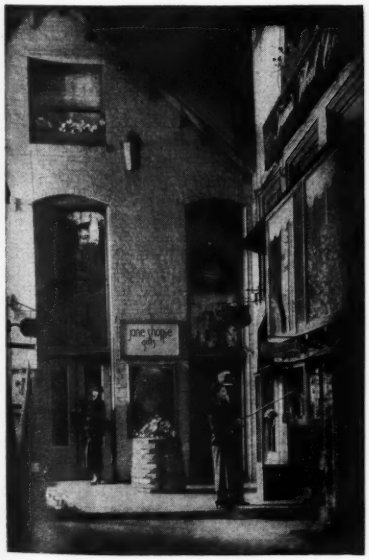
"Almost from the first you will begin to see why San Francisco is the inspiration of so many writers, and why it has been called one of the three story-book cities of America.

"Your time during the convention will be quite taken up, of course, with meetings, tours, visits to this place and that, golf, and what not, to be able to see more than the highlights of the city, enjoyable though that will be; so we recommend that you plan to spend a few days, either before or after the convention, in really seeing the city for yourself. You would reap unexpectedly rich reward by browsing around, in Chinatown, along the Embarcadero, on the hilltops, in the foreign quarters, and in visiting the stores, many of them museums in themselves and some dating back to gold-rush days, and in seeking out the little unique places for meals, for books and works of art. And, of course, there would be the dramatic beauty of such things as Golden Gate Park, to be enjoyed on horseback perhaps, golf above the Golden Gate, and the vast stretch of the Ocean Beach, to call you back again and again. Someone has said that San Francisco, beautiful though it is, is not just something to see; it is a deeper, joyous experience, requiring time to appreciate its essence.

"Well, I guess I'll sign off for this time, old man. See you soon!

"As ever, yours,

"Sanford."



Quaint tea-rooms—or perhaps a cafe where the cuisine is distinctly foreign—you have your choice in San Francisco. Californians, Inc. photograph.

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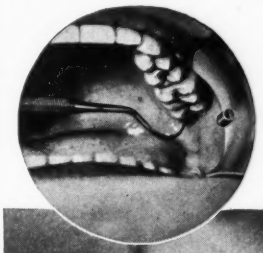
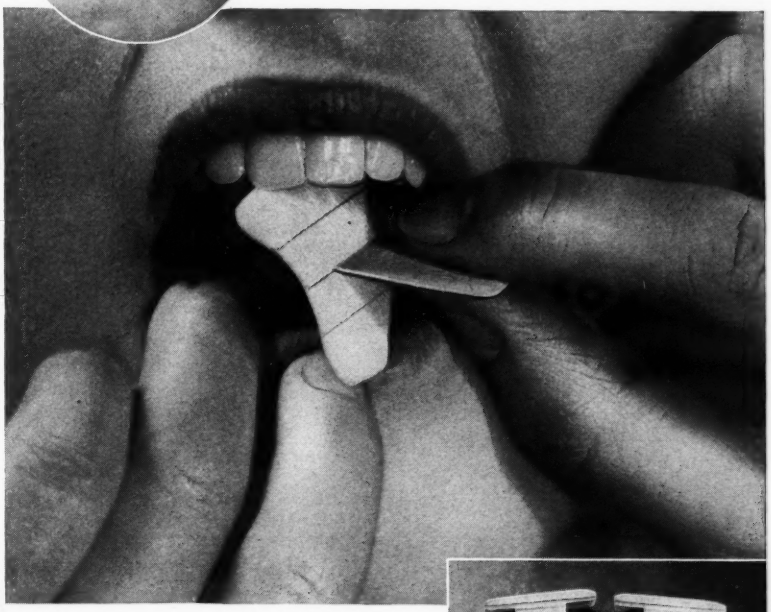
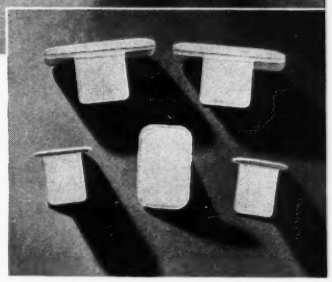
the Areas Your Explorer Can't Reach







EASTMAN *Bite-Wing* **Films are designed especially to show the condition of the sixty proximal surfaces and alveolar tissues. No other film is made for this purpose.**

***Bite-Wing* Films are ready to use just as they come from the package—each snowy white, sanitary packet is of the correct size and shape for its specific function. The bite-tab is properly placed and sufficiently thick to prevent overlapping of cusp images.**

The emulsion of patented Eastman *Bite-Wing* Films has the special sensitivity and contrast factors necessary to record fine detail of the proximal surfaces and alveolar tissues. The safety base eliminates filing hazards common to nitrocellulose base films. Order from your dental dealer.

For periodic examinations—

The complete *Bite-Wing* x-ray examination requires only the films shown here: Two Type 3 (large-posterior) and three Type 1 (small-anterior) *Bite-Wing* Films. Make this examination annually at the time of a prophylactic treatment—it will repay you and your patients many fold.

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Send this coupon and you'll receive a sample of patented Eastman Bite-Wing Film and the booklet, "How to Prevent Toothache."

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I'd like to have your booklet, "How to Prevent Toothache," and a sample of *Bite-Wing* Film, without charge.

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Against a strong current of opinion—bucking the tide so to speak—we announce lower prices on MINIMAX Alloy.

At a time when unusual problems beset the governments of the world, the part silver will play in the rehabilitation of the world monetary systems cannot be foreseen. *Nevertheless* we are reducing our silver alloy prices. It would be wise, we believe, to keep well supplied at these *low* quotations.

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Filings suitable for alloy-mercury gauges.	1 oz. bottle..... $1.60
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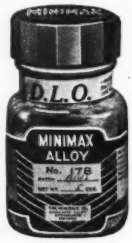

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Use "KELLY'S PASTE"

BOOKS RECEIVED

DENTAL ROENTGENOLOGY (Illustrated), By LeRoy M. Ennis, D.D.S., Philadelphia, Lea & Febiger, Second Edition, 1936. Price: $6.50.

THE HUMAN FACE (Illustrated), A Symposium, Philadelphia, The Dental Cosmos, 1935. Price: $2.00.

YOU MUST EAT MEAT, Fancies, Foibles and Facts About Meat, By Max Ernest Jutte, M.D., New York, G. P. Putman's Sons, 1936. Price: $2.00.

THE PHARMACOPOEIA OF THE UNITED STATES OF AMERICA, Eleventh Decennial Revision, 1936. Agent: Mack Printing Company, Easton, Pennsylvania.

DENTAL INFECTION AND SYSTEMIC DISEASE, (Illustrated), By Russell L. Haden, M.A., M.D., Forward by Edward C. Rosenow, M.D., Philadelphia, Lea & Febiger, Second Edition, Revised, 1936. Price, $2.50.

HOW TO PROTECT BUSINESS IDEAS By William H. Leahy, New York, Harper & Brothers, 1936. Price: $2.50.

ATLAS OF LIFE AND ITS OPPOSING FORCES: PREVENTION, Dental Edition (Illustrated) Edited by George Warfield Clark. Out of Print.

CAVITY PREPARATION AND ABUTMENT CONSTRUCTION IN BRIDGEWORK, By Jacob R. Schwartz, D.D.S., Brooklyn, New York, Dental Items of Interest Publishing Company, Modern Dentistry Series, 1936.

DENTAL FORMULARY, By Hermann Prinz, Philadelphia, Lea & Febiger, Fifth Revised Edition, 1936. Price: $3.50.

THE PRINCIPLES OF DENTAL MEDICINE, The Medical Aspects of Dental Disease, (Illustrated) By F.W. Broderick, M.R.C.S., L.R.C.P., L.D.S., St. Louis, The C. V. Mosby Company, Second Edition, Revised and Rewritten, 1936. Price: $7.50 (Subject of the Editor's Page, DENTAL DIGEST, April, 1936).

PARENTERAL THERAPY, Reference Manual of Extra-Oral Medication, (Illustrated) By Walton Forest Dutton, M.D., and George Burt Lake, M.D., Springfield, Illinois and Baltimore, Maryland, Charles C. Thomas, 1936. Price: $7.50.

If you are not a subscriber
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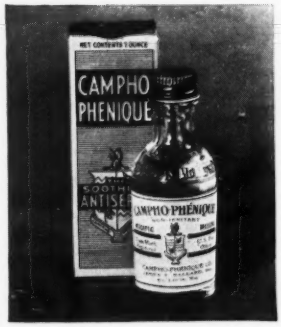
THE DENTAL DIGEST
you will find a convenient
order blank enclosed.
Note special offers.

To prevent Instrument Irritation

use

CAMPHO-PHENIQUE

on lips



Apply Campho-Phenique Liquid on the patient's lips before operating. Your patient will be grateful for the manner in which this soothing, cooling antiseptic wards off instrument irritation.

Especially when lips are chapped and cracked does Campho-Phenique come in handy. For its powerful, non-irritating germicide, acts not only to prevent infection, but actually serves as an analgesic healing agent.

Campho-Phenique has become as much a part of the dentist's equipment as his drills and mouth mirror. They use it with consistently fine results to pack cavities, in the treatment of gingival margins, after extractions. It leaves the mouth pleasantly refreshed.

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The "Built-in" Proximal Contact automatically assures a perfect proximal contact between bridge and abutment. That means:

No lateral movement in the bridge
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In short—
a better, trouble-free bridge.

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You and the patient will be better satisfied.

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Please send full particulars concerning the CDX X-Ray.

Dr. .....

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Please send me a copy of the new American Catalog-Manual A5-36.

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The Perfect Adhesive for Dentures

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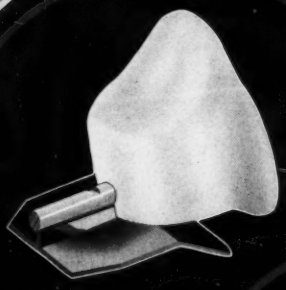

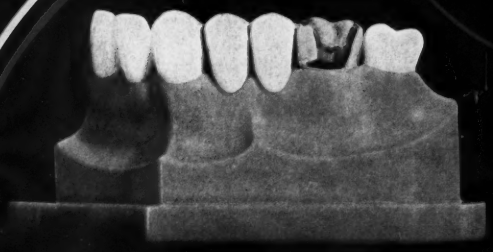

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